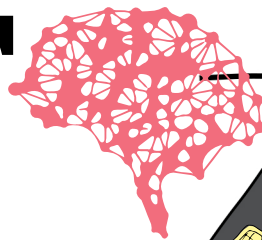


URJIIT

ISSUE 02 | SPRING 2022



DIVERSITY AND
EXCELLENCE:
FEATURING AN
INSIGHT INTO THE
EARLY ID PROGRAM

ILLINOIS INSTITUTE OF TECHNOLOGY
UNDERGRADUATE RESEARCH JOURNAL

MASTHEAD

VOL. 2 | 2022

EDITOR-IN-CHIEF

AMINAH AHMED

FACULTY ADVISOR

CHARLES UTH

FEATURE EDITOR

ESHA RAUT

TREASURER & EVENTS COORDINATOR

AHMED BASHEER

ASSOCIATE EDITOR FOR ENGINEERING

CHANDRIKA HALDAR

ASSOCIATE EDITOR FOR ENGINEERING

HANG MINH NGUYEN

ASSOCIATE EDITOR FOR ENGINEERING

URWA IRFAN

ASSOCIATE EDITOR FOR NATURAL SCIENCES

AYESHA MAHMOOD

ASSOCIATE EDITOR FOR NATURAL SCIENCES

& PUBLIC RELATIONS

SALIH HODZIC

ASSOCIATE EDITOR FOR SOCIAL SCIENCES

SAMANTHA WARPECHA

ASSOCIATE EDITOR FOR COMPUTING

ROHIT PEMMASANI

COVER ARTIST

HELEN LEACH

FOREWORD

Welcome to the 2021-2022 issue of the Undergraduate Research Journal at Illinois Tech (URJ-IIT). This issue represents a significant milestone: it is the first produced under the leadership of our new editor-in-chief, Aminah Ahmed, who previously served as the Associate Editor for Social Sciences. Aminah is a third-Year Biology/Psychology Dual Degree major with research experience not just with Illinois Tech but also with Rush University's Midwest Orthopedics Spine Research group.

The fact that URJ-IIT has successfully managed to transition to new leadership without any interruption in publication is itself a major achievement. Editors-in-chief guide the development and set the tone of their publications. Many of them serve for long periods, sometimes even decades. Student-run publications like URJ-IIT don't have that luxury. Instead of decades, editors-in-chief at student-run publications serve only a few years before they graduate. This turnover, combined with the pressures of schoolwork, have caused many student-run publications to temporarily suspend operations or to cease publication altogether. This is especially true when you consider that Illinois Tech does not offer any of the degree programs that traditionally lead students to careers in the publishing industry. URJ-IIT's successful transition demonstrates the passion for and commitment to research not just of the URJ-IIT editorial board but of Illinois Tech's students in general.

I am proud to be the new advisor to the Undergraduate Research Journal and welcome you to dive in and learn about the exciting undergraduate-driven research done at Illinois Tech.

Charles Uth

IN THIS ISSUE

1

FEATURE

DIVERSITY AND EXCELLENCE IN IIT'S STUDENT POPULATION

Esha Raut

7

MECHANICAL, MATERIAL, AND AEROSPACE ENGINEERING

IMAGE PROCESSING INTEGRATION INTO GLOBAL NAVIGATION SATELLITE SYSTEM REFLECTOMETRY TO REMOTELY SENSE FRESHWATER SURFACE

Lan Tran

10

Humanities

SOCIAL MEDIA VS. USER AGE

Ayesha Mahmood

15

Humanities

RELIGIOUS STEREOTYPES IN TV SHOWS

Ayesha Akram

19

Humanities

THE "ART" OF MEDICINE - COMMUNICATION IN PRIMARY CARE

Adeelah Shamshuddin

Diversity and Excellence in IIT's Student Population

Esha Raut

“Commit to Diversity and Excellence” – a core value and principle at Illinois Institute of Technology. In accordance with this commitment, this principle is stated to ensure inclusion and openness to all viewpoints. It seems like Illinois Tech embodies this value, with students from 90 different countries as of fall 2020. However, IIT admission demographics report a total of 19% underrepresented minority (URM) enrolled students out of all IIT's degree and non-degree seeking students which make up a student population of 6,342.

Underrepresented minorities, as per the IIT website are students of the following ethnicities: “African American, Hispanic, American Indian or Alaskan Native, two or more races, Native Hawaiian, or Pacific Islander.”

When the URM enrolled student percentage is broken down by undergraduate student population as per IIT's 2020-2021 Common Data Set, it's seen that out of a total of 3,122 undergraduates, there are 562 Hispanic/Latino students, 147 African American students, 2 American Indian or Native Alaskan students, 113 students of two or more races, and 1 Native Hawaiian or Pacific Islander student. This means that out of the undergraduate population, there are 18% Hispanic/Latino students, 4.70% African American students, 0.06% American Indian or Native Alaskan students, 3.62% students of two or more races, and 0.03% Native Hawaiian or Pacific Islander students as of fall 2020. Additionally, in fall 2021, Illinois Tech's female students were reported to make up 37% of the total student population.

For a university that values diversity, IIT's student population seems to struggle to commit to that principle, as per student enrollment data. In the past, however, IIT had been in the process of improving diversity, seen in the 1970s when the Early Identification Program (Early ID) was first implemented.

In 1973, General Electric Corporation made a \$25,000 grant to Illinois Institute of Technology for minorities in engineering. Nathaniel “Nate” Thomas was the Assistant Director of Cooperative Education, which was designed to allow engineering students to earn their bachelor's degree while simultaneously working in an engineering position.

When Thomas investigated who the grant would go to, he was startled to discover that there were only six minority engineering students, and he sought improvement. When Thomas toured Chicago area high schools to investigate the issue, he realized that there were too many high-achieving students unaware of the college admissions process and lacking guidance. This led him to pioneer the Early ID.

An ally in the establishment of Early ID came in the form of Dr. Thomas Lyle Martin, IIT's new president in 1974. Dr. Martin and Thomas had a casual conversation that same year, during which the latter was unaware of Dr. Martin's position. Thomas shared his thoughts on IIT's recruitment process, pointing out how few minority students were at IIT considering its south side location.

Dr. Martin believed diversity was key to a successful learning environment and helped Thomas to implement Early ID in 1974 alongside other staff and allies.

The program was established with the goal of “identify[ing] talented minority students who could handle [the] academic challenges of the STEM field,” said Michael Hill, Early ID alum of 1976, IIT alum of 1982, Founder, Chair Emeritus, and Historian of the African American Alumni Association (4A).

Minority students in the top 10% of their respective high school classes interested in engineering were selected for an eight-week summer program to explore various aspects and fields within it, involving team projects, visits to manufacturing corporations, and mentorship in the form of undergraduate students and professors. While the program focused on recruiting Black, Hispanic, and female students, any qualified student with an interest in engineering was accepted.

“Nate recruited students that he felt were prepared for the academic challenged and rigor of college,” said Raymond Nelson, a co-op student personally recruited by Thomas and IIT graduate of 1978.

Thomas and his staff set themselves apart not only by personally recruiting students for the program, but by establishing relationships with trusted high school faculty to point students in the right direction. From there, news of the program spread by word of mouth. In the same process of recruiting students for Early ID, Thomas used similar methods to recruit students to study at IIT. Rather than continuing the traditional method of receiving and reading applications, Thomas pushed the department to reach out to prospective students with his staff.

As years passed, the reputation of Early ID grew, as did IIT’s as a result. High school students found attending the program to be a “point of pride.” The program found its way into the pages of “Who’s Who of High School Students” in Chicago, a reputable journal detailing academically accomplished high schoolers. Chicago newspapers published images and wrote of the talented students in the program.

Dr. Martin also promoted Thomas to the position of Director of Admissions to improve IIT’s student enrollment in 1974. The promotion was a controversial one – Thomas had no background in admissions. Thomas faced resistance from the members of the Faculty Admission Committee, but his close relationship with Dr. Martin shielded him from the politics of the administration.

In Thomas’ first class as a member of the admissions department, 801 freshmen enrolled. This was an incredibly large jump from the 436 freshmen that enrolled in Thomas’ predecessor’s class. By the end of the first year of recruitment, there was a 433% increase in minority students – 39 minority freshmen enrolled at IIT. 52 high school seniors were accepted and ready to attend the Early ID program.

By hiring Thomas as the Director of Admissions, IIT’s incoming class of freshman was seen to nearly double in class size. This move was beneficial to the university financially as well.

Thomas and his staff’s work in admissions increased the 1975-1977 incoming classes to a total of 801, 950, and 987 students respectively. By 1983, African American enrollment at IIT was at an all-time high at 20%, out of a total of 2000 full-time engineering undergraduates.

Early ID gave students confidence that they could succeed in higher education. Students were able to foster a sense of community and experience the college environment shortly before filing their applications, keeping their quality experiences at IIT fresh in their minds. The program acted as a feeder of capable, accomplished engineering students to IIT.

Looking at IIT today, it's clear that many pre-collegiate programs are offered, ranging from Artificial Intelligence to Biomedical Engineering. However, few are like Early ID in terms of having no financial involvement from students. Previous students of the program and alumni treasure their experiences and would like such programs to be continued at IIT for minority students who could benefit from exposure to scientific and technical fields.

Additionally, while many recruitment efforts leave positive impressions on prospective students, recruitment efforts made by Thomas have never been recreated since. Thomas was able to encourage students to seek higher education by having a genuine interest in their success, noted by former Early ID students on his knowledge of every student in the program, which roughly amounted to 200 people. Once the program ended, however, minority student enrollment waned.

Diversity is a key aspect of a successful environment. As a driving factor of innovation and creativity, it offers unique perspectives, which IIT like any university would benefit from. Pioneers like Nate Thomas understood this and fought for the inclusion of those without that power.

"Thomas had a deep commitment to the community surrounding the university," said Zanette Sanders, a member of the Early ID class of 1983 and IIT graduate of 1989. "As an alum, that legacy inspires me to want to do the same."



Pictured above is an image from IIT's former University Relations Department. The department allegedly published the following with the photograph:

"A model rocket zooms into space as Early Identification program students at Illinois Institute of Technology watch their team effort take off successfully. The eight-week program is sponsored by IIT for bright Chicago area high school seniors interested in engineering, and includes team projects, visits to Chicago company and plant locations, and counseling on how to interview for jobs and apply for colleges."



OFFICE OF THE MAYOR
CITY OF CHICAGO

HAROLD WASHINGTON
MAYOR

P R O C L A M A T I O N

WHEREAS, 104 minority students will graduate from Illinois Institute of Technology's "Early Identification Program" August 12, 1983; and

WHEREAS, these students will pursue undergraduate studies in engineering disciplines such as aerospace and biomedical sciences, mechanical and computer engineering; and

WHEREAS, funding for this program is provided by several major multi-national industries and corporations; and

WHEREAS, upon completing the Early Identification Program, students have entered institutions of higher learning at a rate of 100 per cent per class; and

WHEREAS, these 1983 graduates will join a list of former students who have completed over two years of supplemental college work, and all have worked diligently to achieve their goals:

NOW, THEREFORE, I, Harold Washington, Mayor of the City Chicago, hereby declare Friday, August 12, 1983 to be EARLY IDENTIFICATION GRADUATES DAY IN CHICAGO, and direct all parents and concerned parties to congratulate the students and express pride in their splendid academic achievement.

Dated this 9th day of August, 1983.

Harold Washington
Mayor

Works Cited:

- (1976). news from IIT University Relations Department. Retrieved February 23, 2022, from University Archives and Special Collections, Paul V. Galvin Library, Illinois Institute of Technology.
- (1974, August). High School Juniors Preview Engineering Careers at IIT. *Chicago Today*. Retrieved February 23, 2022, from University Archives and Special Collections, Paul V. Galvin Library, Illinois Institute of Technology.
- Facts and reports*. Illinois Institute of Technology. (n.d.). Retrieved April 5, 2022, from <https://www.iit.edu/oii/facts-and-reports>
- Hill, M. (2022, February 9). personal.
- Hill, M. (n.d.). In *Nate Thomas Tribute*. Biography. Retrieved February 23, 2022, from University Archives and Special Collections, Paul V. Galvin Library, Illinois Institute of Technology.
- Illinois Institute of Technology. (n.d.). Common Data Set 2020-21, B. Enrollment and Persistence. Chicago.
- Nelson, R. (2022, February 18). personal.
- (n.d.). photograph, Chicago. Retrieved February 23, 2022, from University Archives and Special Collections, Paul V. Galvin Library, Illinois Institute of Technology.
- Rush, D. (2022, February 27). personal.
- Sanders, Z. (2022, February 18). personal.
- Student demographics*. Student Demographics < Illinois Institute of Technology. (2020). Retrieved April 5, 2022, from <http://bulletin.iit.edu/undergraduate/university-overview/student-demographics>

Image Processing Integration Into Global Navigation Satellite System Reflectometry To Remotely Sense Freshwater Surface

Lan Tran ^{*,1}, Dr. Seebany Datta-Barua ^{*}, Dr. Roohollah Parvizi ^{*}

^{*}Department of Mechanical, Material, and Aerospace Engineering, Illinois Institute of Technology, Chicago, IL 60616, USA

Abstract

Global Navigation Satellite System Reflectometry (GNSS-R) is a technique that detects signals reflected off the surface and analyzes the reflected signals to obtain surface characteristics. This technique was used to differentiate between surface ice and water condition of Lake Michigan in Chicago ^[1]. To confirm GNSS-R results validity, a separate reference is needed to compare with ^[2]. A sensor fusion of camera and a lidar was used to reconstruct the lake surface ^[2]. This reconstructed surface was used as a reference to compare with GNSS-R results ^[2]. Since the current camera frames rate being used to reconstruct the lake surface using the sensor fusion of camera and lidar is two frames per minute, this research explores the effect of increasing the camera frames rate on the reconstructed surface.

I. Introduction

GNSS-R technology was illustrated in Figure 1

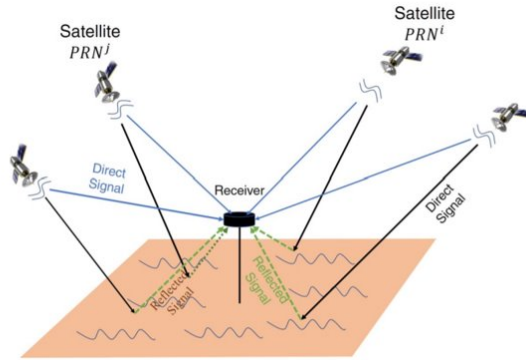


Figure 1: GNSS-R technology is used to analyze surface characteristics

A camera is a device that captures visual images. A lidar, an acronym for light detection and ranging, is a device used to measure distance of an object by emitting a laser beam.

Each pixel is identified by a set of coordinates in the camera coordinate system as shown in Figure 2

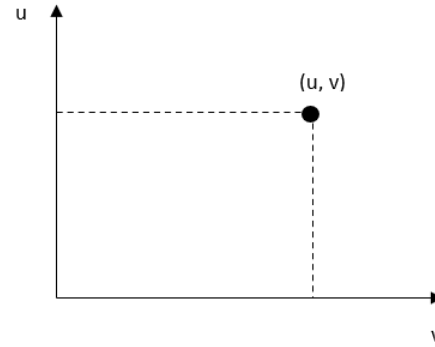


Figure 2: Camera pixel in camera coordinates system

Backward projection is performed using the distance obtained from the lidar and pixel coordinates from the camera image plane to reconstruct the lake surface as shown in Figure 3 ^[2]

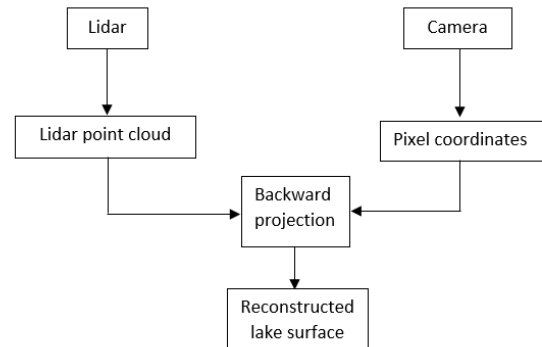


Figure 3: Backward projection is performed to reconstruct the lake surface
Backward projection is illustrated in Figure 4

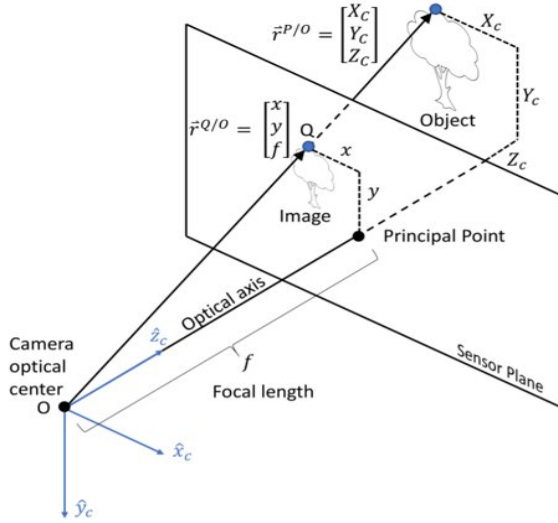


Figure 4: Backward projection technique
The current camera frames rate being used is two frames per minute, and this research aims to increase the camera frames rate to capture more data about the lake surface.

I. Method

The camera frames rate is determined to be fifteen frames per second using a MATLAB function, and the lidar frames rate being used is ten frames per second. The raw data collected from the camera and the lidar is then processed. During data processing, a certain number of lidar and camera frames were skipped, so the current camera frames rates is reduced to two frames per minute.

The lidar sampling rate was also obtained because data processing is done on camera and lidar data, so their sampling rates are related.

The proposed sampling rate is one second as shown in Figure 5

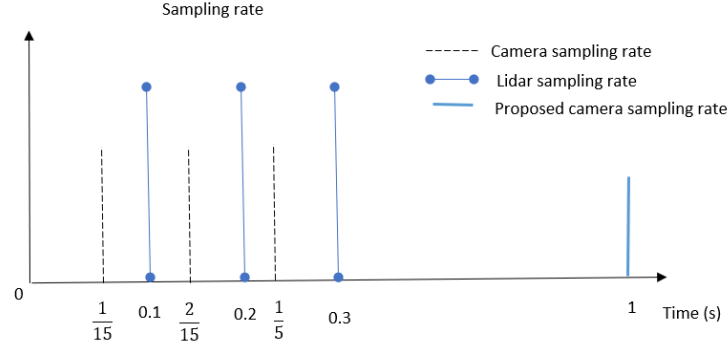


Figure 5: Proposed camera sampling rate

II. Results

The lidar point cloud was overlaid into camera images generated with the current camera frames rate as shown in Figure 6 [2]

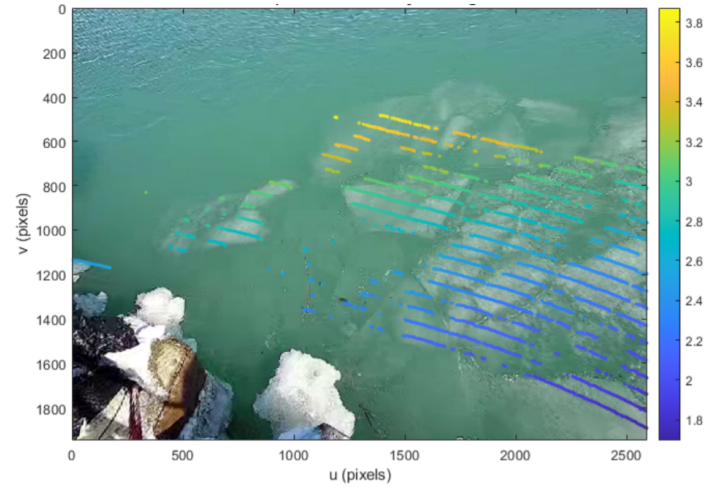


Figure 6: Lidar points cloud overlaid into camera image plane. Image credit: Sharukh Khan [2]

A similar plot of lidar points cloud and camera image will be generated to explore the effect of increasing camera frames rate.

III. Discussion

Surface conditions and its rate of changing are better understood if more camera frames are available. Therefore, the surface reflectivity can be computed with more accuracy.

IV. Acknowledgement

Funding for this research was provided by
Armour College of Engineering R&D program

V. References

- [1] Parvizi, Roohollah. "A Novel Remote Sensing System Using Reflected GNSS Signals." *PHD thesis* . Chicago, August 2020.
- [2] Khan, Sharukh. "3D Reconstruction Of Lake Surface Using Camera And Lidar Sensor Fusion." *Master thesis* . Chicago, August 2020

Social Media vs. User Age

Ayesha Mahmood ^{*,1}

^{*}Department of Humanities, Illinois Institute of Technology, Chicago, IL 60616, USA

Propaganda has recently become extremely prominent across social media platforms. The varying ages of users on different social media platforms play a role in how propaganda is implemented on these sites. This is most clearly seen in the different ages of users on Facebook, Instagram, and Tiktok. According to the Pew Research Center, Facebook caters to many older adults, Instagram is used primarily by many Millennials, and Tiktok has taken storm with young adults and children¹. The different ages and the way older adults, millennials, and young adults interact with the internet impact the way they are influenced by the propaganda they come across while surfing the web.

Facebook, which is used by 73% of adults aged 50 to 64 and 50% of adults, aged 65 and up, is prominent among older social media users¹. Therefore, its propaganda techniques are addressed to older audiences. In the past few elections, Facebook has played a major role in influencing the sway of the votes via false information and propaganda. According to the Washington Post, microtargeting is a major part of Facebook's algorithm that leaves citizens in an information bubble monopolized by one side². Microtargeting advertisements have a low cost, and there can be thousands of ads on the same theme that are sent to a variety of targeted users, as seen by Donald Trump's 2016 campaign with 5.9 million total ads from just June to November. Canalization is prevalent on Facebook with its users being targeted on their interests, purchases, demographics, and political characteristics. For those running political campaigns, there is a Custom Audiences feature that lets these

campaigns upload lists of users taken from voter files to target with ads². The app may sell itself as a social media website to connect with friends and family, but it is now home to politics. Another way Facebook allows campaigns to better promote their message is the

Look-a-like Audiences feature, which targets new users who look similar to those that are on the targeted-users lists, thus working together with the Custom Audiences feature to find similar users. The tools Facebook has created for campaigns to rule over the site make it the perfect place to successfully promote propaganda and could lead to "racist, misogynist, anti-Semitic, anti-democratic or otherwise dangerous views"².

The ways users interact with the app have come a long way as well. They no longer update about every minuscule detail, instead, users "lurk" to see what those around them are posting³. Brands that want consumers to buy from them have also changed the methods they promote their products. Since there is so much being offered on the site, one has a moment to quickly choose what is interesting to them, which is taken advantage of by these brands. A simple impulse changes the decision that is made to like and share a product before going out to purchase it³. Companies send out personalized messages that are automatically clicked by consumers mindlessly scrolling through their feed. Even when a message is ignored, the brand can continue pestering customers with repeated ads until they give in and click on the advertisement. It is impossible to avoid these forms of advertising and propaganda, and this

phenomenon is also seen on other social media platforms as well.

Instagram is a social media website that is prevalent amongst Millennials and is used by 71% of young adults aged 18 to 29 years old¹. It is interesting to see the difference between how information and propaganda are spread on Instagram as compared to Facebook since Facebook owns Instagram and Instagram does not have an option to share posts on one's feed, rather relying on its "Story" feature. News, false or not, that does manage to spread via Instagram makes up for how over a quarter of Americans stay informed on the world around them. One of the major ways that people are informed is by influencers, small and big, that are all over the app. According to Teen Vogue, there is a growing number of influencers that are recruited by political campaigns and partisan groups to spread content in support of their political views⁴.

Smaller influencers can personally reach out to target audiences and share personal stories that their followers can more easily relate to. Interviews done by the Propaganda Research Lab at the Center for Media Engagement at the University of Texas at Austin studied the use of political influencers on social media such as Instagram and found a strong relationship between politically focused marketers, small-scale influencers, and their audiences. These "micro" influencers have been called upon by local governments to sway their local community audiences against vaccine hesitancy⁴. They are trusted by communities because they are often some of the most active members within it and have their main follower base from that area, thus allowing campaigns to use them for targeting specific communities. Campaigns using small-scale influencers can target audiences via shared interests, gender, and age while paying a cheaper pay per post than when using celebrity influencers. This allows them to

spend money on many small-scale influencers at once and spread their messages to a large variety of audiences by using tools such as influencer marketing platforms and customer-relationship management software to find, recruit, and manage influencers simultaneously⁴. These days, there is also a large market for fake influencers that buy fake followers and likes using bots to raise their engagement. This has led to the creation of "engagement pods" or groups of real people who all coordinate to increase each other's social media post engagement. They all join a group to boost each other's fame by commenting on posts as if they are long-time friends, and they can be kicked out if engagement isn't reciprocated⁴. However, while famous influencer support is certainly important and is key to gaining more listeners, the number of followers is not always what matters. Rather, it is about how many people believe the influencer to be credible.

Currently, Instagram is being targeted with anti-vaccine propaganda. The app's algorithm is supposed to show users content that will hold their attention based on their online behavior. Although the company vowed to prevent showing or recommending posts with misinformation regarding vaccines on the Instagram Explore or hashtag pages back in 2019, it seems that nothing has changed, as misinformation about the coronavirus and its vaccine is prevalent on the site⁵. This is incredibly dangerous, as nearly a third of Americans are wary of getting the vaccine, and posts that encourage rampant anti-vax conspiracy theories will only cause enough alarm to derail the nation's pandemic recovery. This misinformation will be amongst the first results one gets when searching up "vaccine" in the Instagram search bar, thus drowning out any good news that does occur, rendering Instagram's pop-up notice on everyone's account with a link to the CDC website fairly

useless. Although a spokesperson has said that the app is continuously trying to strengthen its systems for detection, there is more that can be done⁵. The app is capable of altering its Explore page, search results, and hashtag pages to remove at least some sort of anti-vax propaganda, but it has not yet done so. It's possible there is still much accessibility to this type of propaganda to garner the attention that will keep people engaged as sensational and polarizing content does. While there may still be anti-vax propaganda, at least in the meantime Instagram is doing its role to connect its users with local vaccination sites⁵.

Instagram is also heavily overflowed by Russian propaganda from Russia's Internet Research Agency (IRA), as discovered by the American cybersecurity team New Knowledge⁶. While many assume Facebook to have the most IRA influence, there were over twice as many engagements via likes and comments on Instagram than there were on the former social media website, a difference of 187 million engagements on Instagram versus Facebook's 77 million, without a sharing option on Instagram. As the public became more aware and wary of the presence of propaganda apparent on Facebook and Twitter in 2017, the IRA decided to focus more of its efforts on its Instagram activity. After the US presidential election took place, the IRA's activity on Instagram soared by over 238% according to University of Oxford researchers⁶. This influx of Russian propaganda has gone overlooked for far too long and is now being researched more heavily to understand what should be done to avoid it.

TikTok, an app used by over 35% of children and young adults aged 10 to 19 years old, has a completely different format from the other two social media sites¹. While Facebook and Instagram are primarily promoted to keep in touch with other

people's lives while also tuning into celebrities and influencers, TikTok is based mostly on its "For You" page. This "For You" page is driven by an AI-driven algorithm that provides users with endless videos, mostly from random strangers on the internet that have the same interests as users do⁷. The many videos on the app come from the 3 billion downloads by users who watched 2.8 billion hours in just March 2020 alone⁸. The app offers an easy way to watch and create videos that are accessible to its young audience -- most videos are less than 3 minutes long. However, this does not exclude the app from propaganda efforts. TikTok, a Chinese-owned app, states that it removes 91.3% of videos that infringe its guidelines even before a user report, and this is due to Chinese computer vision technology, proving that its coding is largely based in the country⁸. This has been the cause for much alarm that resulted in an ill attempt by the United States government to ban the app for its American users in fear of Chinese propaganda. The Chinese Communist Party has easy access to the workings of TikTok and can just as easily push disinformation to create conflict, according to a former Pentagon intelligence analyst⁷. Young, impressionable audiences will have no choice but to be fed this propaganda, and eventually become addicted to it, as the algorithm will slightly tweak it to provide them with what they do and do not like. TikTok has also censored content in the past by never recommending videos with information about issues like the Hong Kong protests or the Uighur Muslim concentration camps, showing that the website is not partial and can influence the news that the youth has access to.

Due to China's cybersecurity laws, there is no doubt that the Chinese government has access to the data TikTok gathers from its users. TikTok's interim CEO states that the Chinese government has not requested the

data from its U.S. base but in reality, China does not have to request the information because they already have it⁷. While the information that is being taken by TikTok may seem harmless, it can be used to get a picture of Americans the Chinese government seeks to target by allowing them to create profiles of those they are interested in. The broader concern by many officials is the possibility of Chinese technology companies successfully thriving in the United States market, thus having a straightforward way to spread its influence on an American audience.

The younger audience of TikTok is left vulnerable to propaganda efforts made not only by China but by American political campaigns and advertisements as well. TikTok is a platform in which anyone can go viral at any moment, allowing the creation of a huge celebrity influence as well as small-scale influencers overnight. Similar to Instagram, these influencers can sway their audience to buy certain products or accept certain ideas. The main difference between this and Instagram, however, is that a majority of TikTok's users are underage and are easily impressionable by these influencers they look up to⁸. On TikTok, trends come and go within a few days, so the ability to go viral is always at one's fingertips. This leaves the younger users who have not yet had their chance at virality following those who have. While the older adults on Instagram and Facebook can sometimes detect falsehood from truth, that is often not the case for the younger users on TikTok who do not always have parental supervision.

Overall, when comparing the different types of propaganda prevalent across all three age-different social media platforms, there are comparisons and contrasts to be made. While Facebook has an older audience, its main issue with propaganda is the sharing of false

information and users being put into lists by campaigns, including Russian political influences. Instagram, used amongst Millennials, has a similar issue, but it is done by the use of Instagram Stories, hashtags, and influencers with followers who care about what they have to say. TikTok, a social media used on young audiences, is similar to Instagram regarding influencers, but unlike the other two social media platforms, the propaganda is in video format and is more readily available no matter where one is, as most of the videos viewed come from the "For You" algorithm. Instagram tends to have the most overlap among both social media platforms, maybe because its users are close in age with both other groups. The future can only tell what the next big social media platform will be and what age group will take the biggest liking towards it. It will be interesting if the findings from these social media platforms and age groups can also be applied to other social media platforms and the age groups of the users who are prevalent there as well.

References:

- [1] Auxier, B., & Anderson, M. (2021, April 7). *Social Media Use in 2021*. Pew Research Center: Internet, Science & Tech. <https://www.pewresearch.org/internet/2021/04/07/social-media-use-in-2021/>
- [2] Young, D. G., & McGregor, S. C. (2020, February 14). *Mass propaganda used to be difficult, but Facebook made it easy*. Washington Post. <https://www.washingtonpost.com/outlook/2020/02/14/mass-propaganda-used-be-difficult-facebook-made-it-easy/>
- [3] Alhabash, S. (2019, January 31).

- Facebook is a persuasion platform that's changing the advertising rulebook.* The Conversation. <https://theconversation.com/facebook-is-a-persuasion-platform-thats-changing-the-advertising-rulebook-110090>
- [4] Goodwin, A., & Woolley, S. (2021, October 7). *Political Groups Are Paying Influencers to Spread Partisan Messaging.* Teen Vogue. <https://www.teenvogue.com/story/tiktok-influencers-political-campaigns>
- [5] Cook, J. (2021, June 16). *Instagram Is Still A Hotbed Of Anti-Vax Propaganda.* HuffPost. https://www.huffpost.com/entry/instagram-vaccine-misinformation_n_60c8d867e4b0c7cdc8634aa4
- [6] Wong, J. C. (2018, December 19). *Instagram: from Facebook's "best hope" to Russian propaganda campaign tool.* The Guardian. <https://www.theguardian.com/technology/2018/dec/18/instagram-facebook-russian-propaganda-ira>
- [7] Farmer, B. M. (2020, November 16). *How TikTok could be used for disinformation and espionage.* CBS News. <https://www.cbsnews.com/news/tiktok-disinformation-espionage-60-minutes-2020-11-15/>
- [8] Stokel-Walker, C. (2021, August 16). *TikTok is the new Facebook – and it is shaping the future of tech in its image.* The Guardian. <https://www.theguardian.com/commentisfree/2021/aug/16/tiktok-facebook-tech-future-chinese-video-app>
- [9] Goodwin, A., Joseff, K., & Woolley, S. (2021, December 7). *Social Media Influencers and the 2020 U.S. Election: Paying 'Regular People' for Digital Campaign Communication.* Center for Media Engagement. <https://mediaengagement.org/research/social-media-influencers-and-the-2020-election/>

Religious Stereotypes in TV Shows

Ayesha Akram ^{*,1}

^{*}Department of Humanities, Illinois Institute of Technology, Chicago, IL 60616, USA

We live in a world full of different cultures and religions, so much that even specific countries have various sub-cultures and traditions within certain groups. However, we also have a history of these cultures and groups clashing with one another throughout the past few hundreds and thousands of years. And this idea isn't specific to only one country, but to humans in general. In today's time, we often see these ideas portrayed across various media sources where certain people of color or religious groups are portrayed in a negative light, whether it be knowingly or unknowingly. In this specific paper, we'll be focusing on TV shows and how South Asians are negatively stereotyped in them.

South Asian people are often portrayed as clingy, cheesy, and a somewhat annoying group of people when it comes to TV. So many notable shows, including *The Simpsons*, and Disney Channel Shows such as *Phineas and Ferb* and *Jessie* have had South Asian representation that has often achieved the opposite of what it should. Instead, these characters have only reinforced these negative portrayals and become sort of the forefront of them. They themselves have become another offensive term that is used to describe a group of millions of people. A good amount of childhood shows have characters that are epitomes of South Asian stereotypes; take Baljit from *Phineas and Ferb* or Ravi from *Jessie* for example. This is alarming considering that early childhood and teenage years are when kids are developing and seeing this content on TV is going to have a huge impact on the way they perceive certain groups of people. An article states "Children more often associate positive

qualities like financial and academic success, leadership and intelligence with white characters, and associate negative qualities like lawbreaking, financial hardship and laziness with minority characters" (CBS News). Characters like Baljit or Ravi, who are protagonists, are portrayed as uptight, straight A students who are pushovers. In addition, both characters have very heavy accents although they have grown up in the US. Ironically, the actor for Ravi, Karan Brar, had to fake his Indian accent as he doesn't have one, just to fit into character.

The first thing I want to delve into is the age demographics these shows are aimed at. *Jessi* and *Phineas and Ferb* are both Disney Channel Shows with quite a large following, and both shows are aimed toward younger kids, aged from around 6-15. This is concerning when put into perspective the developing ages of children and teens, which is the same range. In fact, there have been studies regarding the effect of racial stereotypes on younger children, and the issues that they face later. "Most often, negative emotions such as anger, feeling disrespected and outrage are common following experiences with discrimination,"¹. In addition, the article also states that by the age of 4, children are already aware of skin colors and discrimination based off it, even if they don't fully understand the concept of it. If kids are aware of their skin tone and see how their specific ethnicity is treated on TV, they put themselves into a box and it has long-lasting negative effects on them. This also leads them to be at the receiving end of jokes amongst their peers, such as making fun of the way certain food smells, even though

most of these kids have no clue what their actions mean and are just copying what they see on TV and amongst grown-ups.

In addition, Raj from *The Big Bang Theory* and Apu from *The Simpsons* have personalities that are centered entirely around their ethnicity. Again, Raj is portrayed as a weak and feminine character, unable to speak to women. “The jokes directed at “Raj” are often about Indian culture and language generally (“Save some syllables for the rest of us!”) or about the aforementioned overbearing parents, but often are just shoehorned in for racism’s sake.”². Once again, TV shows have succeeded in portraying South Asian men as incapable of being able to talk to the opposite gender and having fun, instead just making their personality about working and studying, and portraying them as unattractive. As for Apu, once again many of the jokes made about him are at the expense of his heritage and ethnicity. “...But before they do, an agent tells Apu that he has to change his last name when he reveals for the first time it's Nahasapeemapetilon. The agent says it'll never fit on a marquee...”³. This joke reflects the way people make fun of the way Desi names sound, and often make a joke out of their pronunciations and the meaning behind it. All of these situations do more harm than good, adding to the negative perception others have regarding Brown men in general and labeling them as nerdy, clingy, and undesirable amongst others.

These portrayals of South Asian characters also have a huge effect on teenagers, often in a negative context. Stereotypes such as ‘Asians are good at Math’ often lead children of said ethnic groups to believe that they are supposed to be good at one thing as opposed to the other. As James writes in his article “Thus, the stereotypes my English teachers held of Chinese people resulted in an expectation that I was supposed to be good at math, not

English”⁴. This quote perfectly sums up the mental restrictions students must deal with, especially when it comes to education. They start perceiving themselves in the way others do and start questioning themselves when they don’t meet a stereotype that is thrust upon them over and over. If a child grows up watching Ravi from *Jessi* and Baljit from *Phineas and Ferb*, they’re going to automatically assume that much of their identity is based on academics. This in turn discourages them from exploring new things and new fields, as well as feeling bad about themselves when they don’t fit the mold that society has created for them. In a context of racism, stereotyping/racial profiling and discrimination thrive and limit the opportunities and possibilities of young racial minority people.

While exploring this topic, it’s important to notice the general negligence regarding racism when it comes to the South Asian community specifically. A great example of this is *The Simpson’s* firing back at the critical documentary *The Problem with Apu*, made by Hari Kondabolu. In his documentary, Kondabolu criticizes the Indian character and the stereotypes he portrays regarding the South Asian community, citing that ‘it’s okay to criticize something you love’. However, after the documentary was released, directors and writers of *The Simpson’s* took a jab at the criticism instead of utilizing that information to correct their views. Speaking directly to the camera, Lisa says, “It’s hard to say. Something that started decades and was applauded and inoffensive is now politically incorrect. What can you do?” The camera then pans to a portrait of Apu, which has “Don’t have a cow, man!” written on it⁶. Just because something has been the norm for years doesn’t make it right, just as how a law doesn’t equal good morals. The appropriate response would’ve been to reconsider the character traits of Apu and dealt with them in

a professional manner, instead an entire community's feelings were disregarded and labeled as 'being too sensitive'. Negligence like this has allowed people to think behaviors and colorist/racist remarks towards South Asians are okay. Growing up, we've had to consistently deal with derogatory remarks such as 'towel head', 'curry muncher' and generalizing the entire sub-continent, disregarding the fact that it's made up of three different countries and hundreds of different cultures.

It should be noted, however, that Hollywood and TV shows, in general, have made progress in their portrayals of Desi characters on screen in the past few years. A great breakthrough has been the addition of *Ms. Marvel* to the *Marvel Universe*, and her background as a Pakistani-American teenager. The character is a young Pakistani-American girl from Jersey City who obtains superpowers and must defend her city. Regarding her personality, creator Sana Amanat writes "In Kamala's case, we want her to be good because she is a traditional superhero, but we want her to have faults and struggle with the idea of believing in what she has been told"⁵. This is a more accurate portrayal of current teenagers who are of South Asian descent, as it portrays the struggles of growing up as a first-generation child and trying to balance two completely different lifestyles. It was also announced that the TV show was in progress and the lead actress, Iman Vellani, is a teenage Pakistani-American girl. In addition, Mindy Kaling's show *Never Have I Ever* released on Netflix has had a huge following since it first dropped its trailer. Similar to Kamala Khan, the main protagonist Devi is a teenage girl of Indian descent, just cruising through high school and experiencing normal teenage problems. This type of representation has been long-awaited, as many young kids have never seen or related to a character on-screen before. Seeing girls like themselves deal with

the same problems they're dealing with and causing trouble, instead of being reduced to stereotypes such as nerds and introverts resonates with them and allows them to feel normal, just like everybody else.

There has also been a rise in actors and directors of South Asian descent in Hollywood. Mindy Kaling and Sana Amanat have broken grounds as creators and have presented characters in the way they want to be shown. In addition, Riz Ahmed made headlines as the first Pakistani to be nominated for an Oscar. Dev Patel and Hassan Minhaj talk about their struggles as not only South Asians, but as Americans as well. They have helped portray Desi people in a more positive light, and broken stereotypes.

We've seen quite a few examples of negative portrayals when it comes to brown characters, and that's still just on TV. There's so much more to be found and talked about when it comes to movies, books, etc. And it's frustrating because for decades these portrayals were seen as normal and only perpetuated the stereotypes people already had regarding them, dismissing all desi ethnicities as smelly, nerdy, and undesirable. This in turn leads to negative effects on children and creates a general image regarding an entire subcontinent of people which affects their relationships with their peers later in life. And although it is true that Hollywood and respective media have made strides in the past few years, that isn't to say the work is done. "And actors still struggle to get lead roles in mainstream films or work alongside another South Asian actor. And while the critiques by performers like Kondabolu have made waves, it still hasn't been enough to take down one of the most racist characters on mainstream television"⁷. There is still much to be explored, and so many more roles can be created for South Asians on screen. Hopefully, we will get to

see this play out in the coming years, and we've already started with small steps.

References:

- [1] *Psychologist: By age 4, children aware of racial stereotypes.* Hartford HealthCare | CT. (n.d.). Retrieved April 16, 2022, from <https://hartfordhealthcare.org/about-us/news-press/news-detail?articleid=26522&publicId=395>.
- [2] Manavis, S., Bush, S., Harrison, A., Spotlight, Corcoran, M., Sarah Manavis @sarahmanavis Sarah Manavis is a senior wri, Manavis, S., & Sarah Manavis is a senior writer at The New Statesman. (2022, April 4). *The Big Bang Theory is a plague on society – we should rejoice in its overdue end.* New Statesman. Retrieved April 16, 2022, from <https://www.newstatesman.com/culture/tv-radio/2018/08/big-bang-theory-plague-society-we-should-rejoice-its-overdue-end>.
- [3] Welk, B. (2018, August 4). *15 'simpsons' episodes that stirred the APU stereotype conversation (photos).* TheWrap. Retrieved April 16, 2022, from <https://www.thewrap.com/simpsons-apu-stereotype-conversation-15-episodes-photos/>.
- [4] *Stereotyping and its consequence for racial minority youth.* Stereotyping and its consequence for racial minority youth | Ontario Human Rights Commission. (n.d.). Retrieved April 16, 2022, from <https://www.ohrc.on.ca/en/race-policy-dialogue-papers/stereotyping-and-its-consequence-racial-minority-youth>
- [5] Arun Dev / TNN / Updated: Sep 15, 2014. (n.d.). *'American Muslims were proud of Kamala Khan': Bengaluru News - Times of India.* The Times of India. Retrieved April 16, 2022, from <https://timesofindia.indiatimes.com/city/bengaluru/American-Muslims-were-proud-of-Kamala-Khan/articleshow/42473218.cms>
- [6] Jackson, G. (2018, April 9). *The Simpsons pokes fun at documentary that criticized Apu.* Kotaku. Retrieved April 16, 2022, from <https://kotaku.com/the-simpsons-pokes-fun-at-documentary-that-criticized-a-1825105222>
- [7] *South Asian actors are fighting Hollywood's racism.* VICE. (n.d.). Retrieved April 16, 2022, from <https://www.vice.com/en/article/paxx4n/south-asian-actors-are-fighting-hollywoods-racism>

The “Art” of Medicine: Communication in Primary Care

Adeelah Shamshuddin ^{*,1}

^{*}Department of Humanities, Illinois Institute of Technology, Chicago, IL 60616, USA

In medicine, there are two major components observed by physicians in their practice: the “science” and the “art” of medicine. The “science” refers to the more technical knowledge, skill, and technique applied by the doctor for the patient while the “art” refers to the degree of empathy, compassion, and support provided by the physician for the patient and their family. The art of medicine is expressed through communication between the doctor and patient (as well as their family). In medicine, “communication between patients and physicians must be based on common understanding in a caring and dynamic relationship that also involves the patient’s family”¹. It should consist of adequate respect and information given from both ends, the doctor and the patient. Communication is important to the very practice of medicine. That is why it has become “necessary to analyze how teaching of communication skills in medical schools has evolved”¹. Medical schools require students to start their education of communication as well as sociology starting from their undergraduate studies. General medical communication in the US occurs in many ways depending on the culture and context it is set in. Intercultural communication in medicine occurs due to the intermingling of cultural identities of patients and doctors alike and how this relationship functions under the frame of national health systems. This showcases the growing importance and platform that communication is being placed on in medical practice on a broader scale.

Communication presents itself in medicine most prominently as “bedside

manner”. Bedside manner refers to the approach the physician or healthcare provider takes in speaking with their patients about their condition, diagnosis, questions, and general health-based interactions. Medical science is exceptionally complicated and involves deeply technical terms. The responsibility and duty to convey this knowledge in accessible and comprehensible means for the patient falls on their doctor who may utilize this to “influence patient behavior through implied communicative messages as well as through overt medical explanations”². This is managed through bedside manner and how the physician chooses to communicate this information with the patient. It is argued that bedside manner is not considered a process for doctors and patients to discuss with one another in a conversational manner. Rather, it may be believed that “by controlling and interpreting information dispensed to patients, doctors influence decisions that patients ostensibly have a right to make for themselves”². This manner of communication indicates a more authoritative role (for the doctor) and a subordinate role (for the patient). While the patient still maintains their autonomy to visit the doctor and the right to not practice what they are prescribed, the doctor holds a position of command once the contact is made between the patient and attending. Since communication is then used to assist the patient through complex health issues they may be facing, the doctor has to be well versed to adequately convey information. The ability to effectively communicate becomes even more complicated in the presence of cultural differences, linguistic barriers, and unconscious biases.

Intercultural communication in medical practice in the US occurs primarily in the case of a majority-originated physician meeting with a patient of an ethnic minority background. In congruence with being granted the title of a “melting pot,” the US has become a very culturally diverse country with many spoken languages and intermingling populations due to incoming immigrants. Though diversity has allowed for the growth and development of this country, it also lends to the issue of how these varying populations may communicate. Therefore, in considering doctor-patient relationships in this multicultural setting of the US, effective communication is expected to be impeded by the cultural differences between the doctor and the patient³. Doctors spend many years studying a certain standard of communication for their clinical practice and in the US, it is almost strictly expected to occur in English. English has become the bridge between these various cultures in order to communicate and is therefore used by health systems so institutions can be accessed by a larger group of people. When non-English speaking immigrants come to these institutions, they may be provided with other resources such as a translator with the goal of more efficient discussion between the healthcare provider and patient. However, this intermediary step to patient care allows space for more misunderstanding and a reduced personal aspect to the care. This is exemplified in the following observations: “all the questions asked by English-speaking patients received either immediate or eventual responses from the doctors, whereas for Spanish-speaking patients, more than half of the questions asked were answered by the interpreters and the doctors were not even aware”². This shows that while communication is becoming more and more of a standard in medical education, there is comparatively little to no training on intercultural communication. Considering

the context of the continuously more diverse country the United States is shaping to be, intercultural communication is a necessary skill to be developed by future physicians and to be adopted by large-scale systems and institutions in this nation.

Lacking skill in intercultural communication not only affects immigrant patient populations, but also racial minorities living in the United States. There is an evident dichotomy between how black and white individuals are treated in the setting of a medical institution. Black Americans face significant racial profiling and health inequities in their medical encounters compared to white Americans. It has been observed that “black patients consistently experienced poorer communication quality, information-giving, patient participation, and participatory decision-making than white patients”⁴. Racial inequalities in the US affect how healthcare is administered. If healthcare providers maintain biases and hold racist viewpoints, discrimination and reduced quality of care for racial minorities are expected to show in their practice. This prejudice is “often based on nonverbal aspects of behavior. That is, the negative prejudgement is triggered by physical appearance of behavior”⁵. The health of people of these minority backgrounds is then put into danger and can be further harmed with ignorance of health providers and their resulting lack of effort into communicating appropriately. Communication takes place here in the manner of microaggressions and lacks intercultural competence. The notion that “neither patient nor doctor acts independently of one another.....a critical difference between the two is that the behavior of the former is primarily reactive, whereas that of the latter is largely determining” becomes an even more concerning relationship when considering lack of appropriate communication and biases influencing the care provided based on

racial discrimination². Insufficient communication in this particular intercultural setting is becoming more and more investigated. In order to address this, there is widespread advocacy for anti-racism and anti-discriminatory practices to become a larger portion of the training process for incoming physicians.

As changes are being made to how intercultural communication skills are regarded in medical practice and its importance is becoming more enforced, it is also important to note the future of medical communication in the context of technological advancement. In primary care, there is always the matter of how to make medicine and medical knowledge accessible and comprehensible to the general public. There are now many proposals that push towards additional online care as more and more healthcare systems and corporations believe “it is now the right time for the development of information communication strategies that bridge the divide between medicine and public health in a manner that facilitates large-scale healthcare intervention and management”⁶. This seems to be the most efficient method in addressing public health issues and emergencies remotely and from a home setting. In times of emergency, healthcare systems are often overwhelmed and have a shortage of resources. With a system of online social networking, people have the ability to attend to their needs more immediately. With health information technology, issues concerning intercultural communication are more easily addressed with an abundance of online resources that can assist in lowering linguistic and cultural barriers.

Communication is vital to healthcare systems in all countries. It provides the foundation for the care each health system offers and how medical services are conducted. Depending on the culture and context medicine is practiced in,

communication can take on many forms. Intercultural competence lends to advancement of skill with intercultural communication, which would therefore better our healthcare systems and make them more fair and accessible to the diverse public. Being even more cognizant of its importance is vital to the next generation of future healthcare providers, whether it be through in-person or virtual interactions.

References:

- [1] Ferreira-Padilla, Guillermo et al.
“Communication skills in medicine: where do we come from and where are we going?.” Croatian medical journal vol. 56,3 (2015): 311-4. doi:10.3325/cmj.2015.56.311
- [2] Bonvillain, Nancy. Language, Culture, and Communication : the Meaning of Messages . Eighth edition. Lanham: Rowman & Littlefield, 2020. Print.
- [3] Paternotte, Emma et al. “Intercultural doctor-patient communication in daily outpatient care: relevant communication skills.” Perspectives on medical education vol. 5,5 (2016): 268-75. doi:10.1007/s40037-016-0288-y
- [4] Butler, Stuart M, and Nehath Sheriff.
“How Poor Communication Exacerbates Health Inequities – and What to Do about It.” Brookings, Brookings, 22 Feb. 2021, www.brookings.edu/research/how-poor-communication-exacerbates-health-inequities-and-what-to-do-about-it/.
- [5] Martin, Judith N., and Thomas K. Nakayama. Intercultural Communication in Contexts. McGraw-Hill, 2022.

[6] Kuo, Chin-Chi, and Poojitha Balakrishnan. "The future of health care communication and promotion." *Journal of telemedicine and telecare* vol. 19,4 (2013): 231-2. doi:10.1258/jtt.2012.120902

[7] Kirkpatrick, James N. "Putting It All Together: The Art and Science of

Medicine, Commentary 1." *Journal of Ethics | American Medical Association*, American Medical Association, 1 July 2006, journalofethics.ama-assn.org/article/putting-it-all-together-art-and-science-medicine-commentary-1/2006-07.