Sanjit Singh

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I am a highly organized and motivated student of computer science with a passion for technology. I am experienced in AR & VR cross platform applications development (Android, IOS). I have the skills and experience to conceptualize, build, test, and deliver. I am seeking an employment opportunity to increase my knowledge and skills level while contributing to the goals of an organization.

SKILLS

Programming Languages: Java, C#, XML, HTML, CSS, Python, JSON, Swift, JavaScript, C/C++

Hardware: Arduino, Oculus Rift, Leap Motion, Microsoft Kinect, Smart Glasses

Platforms: Unity3D, Eclipse, Android Studio, Android of Things, Visual Studio, Arduino IDE, Oculus, Google Cardboard, Microsoft Kinect

Tools/Technologies: Augmented Reality, Virtual Reality, Vuforia, OpenCV, Game Development, Game Design, MRTK

EDUCATION

Rutgers University, New Brunswick, NJ   September 2020 – December 2021

Bachelor of Science in Computer Science

New Jersey Institute of Technology, Newark, NJ   September 2019 – May 2020

Transferred to Rutgers University - New Brunswick.

Mercer County Community College, West Windsor, NJ   Graduated May 2019

Associates of Science in Computer Science
Recognized in school article: http://www.mccc.edu/news/2019/general/Olu_Sanjit_Internships.shtm l

WORK EXPERIENCE

MPLEX   August 2021 – Present
Mixed Reality Developer
Working on developing VR games using Unreal engine

Rutgers University @ Computational Biomedicine Imaging and Modeling Center   August 2021 - Present
Research Assistant @ The Intelligent Visual Interface Laboratory
Conducting Computer Graphics & AI research on Developing AI models for multi-agent soccer simulation using Unity3D.

NASA SUITS Augmented Reality Challenge

Sub-Team Lead   June 2021 – Present

Project Team Leader   September 2020 – June 2021

- Participating in NASA SUITS Augmented Reality competition to develop AR systems for HoloLens 2 to help astronauts going on lunar exploration by 2024.
- Utilizing Microsoft Mixed Reality Toolkit (MRTK) to develop UI Components and gesture recognition features along with voice commands for Heads Up Display (HUD)
- Developed geology sampling documentation UI for astronauts to have an accurate idea of what to collect as they navigate the moon.
- Additionally implemented navigation component that can help astronauts plan out wayfinding points from one location to another.
- Long term goal is to publish paper to a research conference. More Progress on project coming soon!

The University of Auckland   May 2021 – September 2021

Research Intern @ Empathic Computing Lab

- Conducted research on Eye-gaze, inter-brain synchrony (hyperscanning), and collaborative VR in conjunction with online counseling during the COVID-19 period
- Worked on data & EEG analysis using Python. Utilized HyPyP and MNE for brain hyperscanning and interconnection between communication.
- Worked with SciPy library to calculate average data of eye-tracking for x and y coordinate and then computing average result into a correlation using Kendall tau function (method built into SciPy)
- Focused majority of my efforts on eye gazing analysis using NumPy & Pandas Library for analyzing eye contact degrees through eye Fovea for odd and even pairs to calculate if their coordinates of eye contacts are within range of fovea to understand accurately if there is a direct communication going in between test subject pairs
- Overall goal is to conduct python analysis to get more information on brain synchronization and eye gaze communication to better understand inter-personal communication between 2 or more users which would help understand more about human communication/emotions in real-world scenarios vs the virtual world. With that information accordingly we would use that analysis to develop realistic virtual worlds in Virtual Reality to help understand more about brain hyperscanning and interpersonal communication through VR
- Published Paper to ISMAR workshop conference
- Pending Publication to Frontiers journal in Neuroergonmics

National Security Innovation Network   June 2021 – August 2021

X-Force Fellow – Software Engineering Intern

The X-Force Fellowship program is an opportunity for technologists and entrepreneurs to serve their country by solving real-world national security problems in collaboration with the U.S. military. Responsibilities:

- Utilized storyboarding techniques to showcase future technologies in a video/VR format.
- Designed scenarios for warfighter jet training, combat simulation training, and for planning out future battle strategies using Unreal Engine 4.
- Worked blueprint scripting language in unreal on virtual characters, HUD, and AI agents
- Goal is to support the assertion that money should be invested into different storytelling tools rather than staying in the past and using PowerPoint. In addition, this project has other application use as well such as helping soldiers in planning situations, training through wargaming concepts, and more.

- Work done towards the project; all intellectual property is owned by participants. The next goals are too commercial this product by forming a startup and applying through the NSIN program known as Vector.

XBoost

Co-founder & Vice President   February 2020 – April 2021

Early-stage biotechnology startup funded by National Science Foundation Innovation-Corps (I-Corps) program.

Managed a cross-disciplined team of computer scientists, software engineers, hardware engineers, mechanical & biomedical engineers, designers & medical clinicians.

Worked on developing rehabilitative assistive robotic exoskeleton devices and VR/AR Interactive environment for patients with strokes, musculoskeletal conditions, orthopedic rehabilitation & more.

The startup was expected to bring in pending collaboration with Mount Sinai Hospital & the University of Pennsylvania Robotics Rehabilitation Lab.

Due to COVID-19, XBoost was unable to secure funds.

New Jersey Institute of Technology   August 2019 – September 2020
Research Assistant @ Biodynamics & MIXR Lab
Biodynamics Lab
- Conducted research in the Department of Biomedical Engineering towards Virtual Rehabilitation Therapy
- Utilized Arduino Micro-controller, IMU sensors and myoware sensor devices all towards robotic exoskeleton arm for neurological patients with Cerebral Palsy that require neuromuscular support.
- Interfaced robotic arm through Arduino to Unity3D to serve as a wearable controller for video games.

The Biodynamics Lab was selected by NSF I-Corps program with a funding of $2,000 to conduct research & development that could be potentially commercialized into a startup that develops core technologies, robotic. devices & interactive games for therapeutic clinics. Taking all the work conducted in the research lab to XBoost.
MIXR Lab   August 2019 – January 2020

- Conducted research in the Department of Computer Science & Informatics towards military medicine.
- Utilized Machine Learning & Computer Vision Library into Unity3D to detect accurate pose estimation.
- Utilized Azure Kinect DK for motion tracking, calculating body joints, 3D mesh scanning and point cloud visualizations.
- Goal was establishing a tool for Microsoft HoloLens 2 that can help paramedics & surgeons treat Injured soldiers shot on the ground-based off accurate pose position, mesh scanning through point cloud visualizations and overlaying holographic projection of 3D human muscle skeleton model onto a human body of injured soldier.

Enable Games / Drexel University Spin off startup@ Replay Laboratory   May 2018 – June 2020

Game Developer & Researcher

- Developed projects using Unity3D to enhance physical therapy for patients who have Cerebral Palsy, Parkinson's, and other neurological conditions.
- Built custom asset library to integrate the use of Xbox Kinect to enable motion tracking in the use of physical therapy activities.

- Implemented use of Stykz, a motion capture studio software to take real life motions and turn them into animations into games and further exporting all movements and motion tracking input into RAW data using JSON.
- Reviewed roles in clinical trials for usability purposes with patients. Analyzing inputs and gathering more clinical data between interaction of the patients through the games and recording their progress through our platform.

Weill Cornell Medicine / Cornell Medical School   April 2019 – June 2019

Research Assistant

- Worked in engineering sub-team researching the integration between 3D segmented heart models derived from CAT scans and fluoroscopic images.
- Utilizing 3D models & AR Visualizations to minimize error on syncing both CAT scans and fluoroscopic images for catheter approximation during cardiovascular Interventions.
- Worked on improving thickening of blood volume of 3D Segmented CAD Models using Rhino 3D & Geomagic Wrap to test into Microsoft HoloLens for visualizing detection of catheter accuracy to better assist Interventional cardiologist.

HACKATHON PROJECTS

OperatAR   Dec 2017 - Present

An app that teaches users how to perform surgery and how to give clear directions in an operation room through Augmented Reality. The app was built using Unity3D, C#, Vuforia and Android Studio integrated through Google Cloud using speech to text API.

CelebralPalsyVR   Nov 2017 – Nov 2017

A series of VR-based games that help rehabilitate cerebral palsy patients who are partially able to move their feet and/or hands. The patient uses an Oculus Rift headset with Arduino sensors attached to their legs and hands. I worked extensively on the implementation of the main menu, UI, VR input. Also helped develop certain movements that our VR game could use to help cerebral palsy patients. Worked on backend with Android Studio to use the gyroscope tool for our balance measurements with mobile Android devices serving as the sensors of physical motion.

AWARDS/HONOR

MIT Linq Catalyst Fellowship   MIT linQ Fall 2021

Selected as a Catalyst fellow for the 2022 cohort. Catalyst brings together multidisciplinary experts to work together in an iterative process to identify and validate unmet medical and health-related needs, discover new project opportunities, and develop action plans.

Amazon Web Services - Best Use of AWS   HackRU Fall 2017

Developed a machine learning program that can diagnose Diabetes based on the information that patients provide to Amazon Alexa through a series of questions.

Top 30 Hack   PennApps Fall 2018

Developed a social media app using Facial Recognition to help others get to know each person faster. The app scans their face and through the datasets display their name and stores the exact day, time, and location where they met.

NSF I-Corps Grant Recipient   National Science Foundation Innovation Corps Spring 2020

$2,000 grant awarded to "teams interested in exploring the commercial viability of their ideas for products and businesses that are based on their own inventions.

MIT COVID-19 Challenge Winner   MIT COVID-19 Challenge Spring 2020

Came up with a program that can-do questionnaire testing and then based on answers get a sample test kit sent home. Once that test kit is sent back to clinical labs, they can use Machine Learning Algorithms to conduct antibody testing to accurately diagnose if the patient has Coronavirus or not.

Publications

Eye-Gaze, Inter-Brain Synchrony, and Collaborative VR in Conjunction with online Counselling: A Pilot Study

Ihshan Gumilar, Amit Barde, Ashkan F. Hayat, Mark Billinghurst, & Sanjit Singh