Rishi Vanukuru — Curriculum Vitae

Personal Information

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Education

Now — **IDC School of Design, IIT Bombay** — CGPA: 9.54/10
Master of Design in Interaction Design, 2018 - 2020

2018 — **Indian Institute of Technology Bombay** — CGPA: 9.12/10
Bachelor of Technology in Civil Engineering
Minor in Design at the Industrial Design Centre

2014 — **Apeejay School, Nerul** — Percentage: 97.80%
All India Senior School Certificate Examination

Research

July 2019 - Present — **Designing Accessible Spatial Audio Interfaces**
Guide: Dr. Anirudha Joshi, IDC School of Design, IIT Bombay

- As part of a graduate thesis project, conducting research into auditory interfaces for visually challenged technology users
- Designed an experimental method to study the effect of concurrent speech on search tasks involving heading navigation using screen readers
- Developed a prototype application capable of rendering spatially-separated streams of concurrent speech using Resonance Audio and Unity
- Conducted a pilot study with 4 visually challenged and 4 sighted participants, and redesigned the experiment for a larger study
- Paper titled **"Accessible Spatial Audio Interfaces: A Pilot Study into Screen Readers with Concurrent Speech"** has been selected as a finalist at the CHI 2020 Student Research Competition

May 2019 - July 2019 — **Experiments and Design for Virtual Reality**
Guide: Dr Simon Richir and Dr. Sylvain Fleury, Arts et Metiers Laval Institute, Laval, France

- Designed a Virtual Test Environment to investigate the effect of movement on creativity in Virtual Reality through quantitative experiments
- Performed statistical analysis involving Confirmatory Factor Analysis and Structural Equation Modeling on the data obtained from the experiment
- Designed and prototyped new interactions and User Interface elements for 'Time2Sketch' - an in-house collaborative 3D drawing application (for HTC Vive)
- Created an Environment Control System for the 'Prospective 2030' VR experience about a futuristic city in France

July 2017 - April 2018 — **A Bio-inspired Interactive Tool for Multi-Modal Transportation Network Design**
Guide: Dr. Nagendra R. Velaga, Department of Civil Engineering, IIT Bombay

- Developed and extended a multi-agent computational model based on the biological Slime Mould, for the purpose of multi-modal transportation network design
- Obtained solutions to route assignment problems and tested them in real-world scenarios using Anylogic Agent-based simulation software
- Created a visual design tool based on the Processing Java framework for the application of the model
- **In Proceedings** - Vanukuru, Rishi, and Nagendra R. Velaga. "Multimodal Transportation Network Design Using Physarum Polycephalum-Inspired Multi-agent Computation Methods." *International Conference on the Applications of Evolutionary Computation*. Springer, Cham, 2018.

Design

July 2019 - Sep. 2019 **Musical Expression in Virtual Reality**
Course Project: Design for Immersive Media - Advanced, Prof. Jayesh Pillai

- Designed a Virtual Reality application aimed at helping novice musicians build a visual intuition for music theory concepts such as scales and harmony
- Developed a mechanism to translate key-presses on a physical electronic piano into visual modifications in a Virtual Environment using C and Unity3D
- Built the application for HTC Vive VR headsets, and implemented hand-tracking with the Leap Motion head-mounted depth sensor

Mar. 2019 - Apr. 2019 **Tools for Currency Detection**
Course Project: Human Factors in Interaction Design, Prof. Swati Pal

- Designed and created prototypes of two arduino-based electronic devices to aid visually challenged persons identify new currency notes introduced by the Indian Government

Feb. 2019 - Mar. 2019 **Expresso - An Interactive Installation**
Exhibit at TypoDay 2019

- Designed and built a large-scale expressive typewriter based on an electronic piano, with pressure-sensitive keys that influenced the visual characteristics of the glyphs being typed out on a projector screen
- Interfaced a MIDI keyboard with a website to render Variable Fonts through JavaScript, in order to achieve the required dynamic typography effects

Jan. 2019 - Apr. 2019 **ReVoice - Speculative Design**
Course Project: Trends in Interactive Technologies, Prof. Venkatesh Rajamanickam

- As part of a course on Design Fiction and Speculative design, created a series of physical 'diegetic' prototypes of devices from a future where audio manipulation fuelled by artificial intelligence pervades all forms of media
- Wrote a short science fiction story to place the future prototypes in the context of today's world

Feb. 2019- Mar. 2019 **The Styrofoam Podcast**
Course Project: Instructional Design, Prof. Venkatesh Rajamanickam

- Designed the content for a serialised podcast about the IDC School of Design and the process of applying for graduate studies in design, as part of a team of 10 students
- Recorded and produced a 5-episode podcast, currently having over 10,000 plays on the SoundCloud streaming service

Oct. 2018 - Dec. 2018 **Soundspotting - Connecting Communities through Interactive Social Soundscapes**
Course Project: Interaction Media Senses, Prof. Ravi Poovaiah

- Designed a system that allows people to experience Interactive Soundscapes consisting of a virtual crowd environment created using Resonance Audio and Unity3D along with a physical head mounted Arduino controller
- Conducted initial tests of the system with users from our institutional community, to gauge its usability and level of acceptance

Relevant Courses

Design	Design for Immersive Media, Design Research Methods, Human Factors in Interaction Design, Instructional Design, User Studies, Usability Analysis, Interface Design, Trends in Interactive Technologies
Engineering	Introduction to Electrical Engineering, Fundamentals of Urban Science and Engineering, Solid Mechanics, Structural Engineering, Statistics for Civil Engineering
Music	Introduction to Music Production, Developing your Musicianship *(Berklee College of Music on Coursera)*; Music as Biology *(Duke University on Coursera)*
Other	Machine Learning *(Stanford University on Coursera)*, Introduction to Computer Science, Introduction to the Study of Language, Engineering Law

Test Scores

GRE	Total : 338/340
	Quantitative Ability: 170/170 Verbal: 168/170 Analytical Writing: 5/6
TOEFL	Total : 118/120
	Reading: 30/30 Listening: 30/30 Speaking: 29/30 Writing: 29/30

Technical Skills

Programming	C/C++, C#, MATLAB, R, Processing
Software	Unity3D, Adobe Suite, FL Studio
Web Development	HTML, CSS, Javascript
Prototyping	Arduino, Android Studio
VR Development	HTC Vive, Windows Mixed Reality, Oculus Quest

Academic Achievements

- Attained a 99.97 percentile (All India Rank 394) in the Joint Entrance Examination (JEE) - Main 2014, among 1.279 million candidates
- Secured an All India Rank of 1680 in the JEE Advanced 2014, among 0.15 million students
- Attained a 99.97 percentile (top 100 out of 1.03 million students) in the AISSCE 2014
- Secured an All India Rank of 29 in CEED (Common Entrance Exam in Design) 2019, among 5491 candidates.

Positions of Responsibility

July 2018 - Present — **Teaching Assistant**
Supervisor - Prof.Jayesh Pillai, IDC School of Design

- Assisting in the organisation of classes for B.Des and M.Des courses, as well as projects that are undertaken by the VR@IDC research group

July 2019 - Nov. 2019 — **Student Volunteer**
India HCI 2019, Hyderabad

- Designed and maintained the online registration portal for India HCI 2019, a national conference organised by the HCI Professional's Association of India

Jan. 2018 - May 2018 — **Teaching Assistant**
Department of Civil Engineering, IIT Bombay

- Taught a class of 60 freshman students in the weekly tutorial session along with two co-TAs, for the course CE102 - Engineering Mechanics

Apr. 2017 - Apr. 2018 — **Institute Student Mentor**
ISMP, IIT Bombay

- Personally mentored 12 freshmen students to guide them through their first year, and help them overcome their academic and personal challenges
- As part of a team of mentors, worked to assist the freshman batch in adjusting to campus life and navigating various social and linguistic barriers

Apr. 2016 - Apr. 2018 — **Department Academic Mentor**
Department of Civil Engineering, IIT Bombay

- As part of a two tier council in conjunction with the Student Mentorship Program, helped sophomore students in the Civil Engineering department solve problems, academic or otherwise, and guided them through the year
- Helped increase Faculty-Student interaction through a number of initiatives, such as organising Open House sessions and maintaining a department blog