RAYAN ISRAN

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MSc student, researcher (haptics, UX), engineer, and software developer, with five years of multidisciplinary experience. I am looking to foster my skills in an exciting and challenging workplace with a dedication to building novel technology.

EDUCATION

MSc Electrical and Computer Engineering, McGill University — 2020-2023
- **Thesis:** Designing Audio-Haptic Systems to Render Charts for Blind Individuals — **GPA: 3.81/4.00**
- **Courses:** Human-Computer Interaction, Haptics, Machine Learning, Natural Language Processing, Digital Signal Processing — Montréal, Canada

BE Mechatronics Engineering, Shaheed Zulfiqar Ali Bhutto Institute of Science & Technology — 2013-2017
- **Major Courses:** Computer Programming, Machine Design, Mechatronic System Design Robotics, Data Structures, Control Systems, Digital Image Processing — **GPA: 3.66/4.00** Karachi, Pakistan

RESEARCH EXPERIENCE

Shared Reality Lab, McGill University — Montréal, Canada
Haptics Designer, IMAGE Project[1] — Mar 2021 - Present
IMAGE aims to make internet graphics accessible through rich audio and touch.

- Brainstormed, designed, and prototyped audio-haptic renderings for web graphics in Java and TypeScript.
- Designed, conducted and thematically analyzed user studies with blind users to evaluate viability of low-cost force-feedback device against tactile display in multimodal setting with spatial sound.
- Created TypeScript API to integrate force-feedback device into web extension.
- Implemented end-to-end audio-haptic end-to-end user experience in web extension.
- Developed prototyping tool in TypeScript to rapidly create, edit, and distribute interactive audio-haptic experiences through touch gestures for tactile display. Created framework in tool to support automatic generation of renderings for targeted types of graphics. Demoed tool to prospective industry-partner for collaboration.

Haptic Perception Researcher — Mar 2021 - Aug 2022
- Designed experiment to evaluate vibrotactile acuity on the forearm.
- Developed hardware and software, and conducted user studies to test hypotheses.

BE Capstone Project, SZABIST — Karachi, Pakistan
Mechatronics Engineer, Coastal Ocean Data Buoy — Aug 2016 - Aug 2017
Led design and construction of coastal ocean data buoy with two other researchers.

- Ideated and developed dual-purpose design, to allow for use as a float for wave-energy power generation, or a wave-data measurement device for long-term coastal analysis.
- Developed telemetry system to acquire, store, and transmit sensor data through Xbee radio links in C using Arduino software.

PROFESSIONAL EXPERIENCE

Avery Dennison — Karachi, Pakistan
Techno-Service Commerical Engineer — Feb 2018 - Oct 2018
- Provided on-site system and equipment installation and training of thermal printing machines to 20 clients throughout Pakistan. Led to 16% growth in sales.
- Provided maintenance support on ad-hoc basis by phone, remote software assistance, and on-site visits.
- Created and maintained contracts for clients. Performed audits at client venues on periodic basis.
- Wrote Excel macros to automate sales tasks for customer service department to reduce hours of manual data entry and wrangling.

[1] `https://image.a11y.mcgill.ca/`

TEACHING EXPERIENCE

Teaching Assistant, Design Principles and Methods, McGill University — Jan - Apr, Sep - Dec 2022
- Supervised and provided technical support to students creating robotic systems using Lego Mindstorm EV3 and Raspberry Pi for course-based project.
- Graded and provided feedback to students on weekly lab exercises.

Teaching Assistant, Embedded Systems, McGill University — Jan 2021 - Mar 2021
- Prepared and graded Arduino-based lab assignments.
- Created test bank of questions and conducted oral quizzes for students.

Laboratory Engineer, SZABIST — Oct 2018 - Jan 2021
- Conducted labs, and prepared and graded exams for Thermodynamics, Fluid Mechanics, Heat Transfer, and Mechatronic System Design to 100+ students.
- Taught students to create mechatronic systems using Arduino, Raspberry Pi, Siemens' S7-200 and SIMATIC Step 7 PLC software, and analyze data using Data Acquisition equipment and software.

SKILLS

Programming: Python (tkinter, pandas, matplotlib, numpy, OpenCV), TypeScript, Java, C, MATLAB, C#
Tools: Jupyter Notebook, LaTeX, Git, Adobe Photoshop (graphic design), Sony Vegas (video editing)
Research Methods: Prototyping, usability testing, semi-structured interviews, thematic analysis, data visualizations
Hardware / DIY: Arduino, Raspberry Pi, Leap Motion, Laptop Repair

PROJECTS

Automation & Analysis Tools | remote — 2017
- Developed console application tool for a gaming website to scrape, clean, parse, and export data into required format for further analysis, minimizing manual work and reducing daily incidence rate of overlooking important records.
- Generated **data visualizations** (heatmaps, charts, infographics) to explore statistical trends of video game records.
- Co-developed SMS-based alert system using the Twilio API service to send notifications when new world records are achieved.

Software Controlled Robot | Karachi, Pakistan — 2016
- Created 4-degree-of-freedom jointed-arm robotic structure mounted with servo motors.
- Developed GUI in C#.NET to read and parse Arduino instructions to control servo motor-mounted joints.

AWARDS AND SCHOLARSHIPS

Scholarship Recipient, McGill University (CAD 53,333 in funding) — *2020 - 2023*
Globally Certified Service Engineer, Avery Dennison — *2018*
Teamwork, Avery Dennison — *2018*
Dean's Honor Roll, SZABIST — *2017*
4x Scholarship Recipient, SZABIST — *2015 - 2016*
Outstanding Student Award, SZABIST — *2015*

PUBLICATIONS

R. Isran, K. Sepehri, K. Theivendran and A. Anwar, "Towards More Effective Data Visualization Methods Using Haptics," 2021 IEEE World Haptics Conference (WHC), Montreal, QC, Canada, 2021, pp. 590-590, `https://ieeexplore.ieee.org/document/9517255`.

SERVICE

- **Co-reviewer**, World Haptics Conference 2021
- **Co-reviewer** (meta-review), Haptics Symposium 2022
- **Co-reviewer**, World Haptics Conference 2023

HOBBIES

• Hiking • Volleyball • Badminton • Speedrunning. I am a professional speedrunner for the Nintendo 64 games GoldenEye 007 and Perfect Dark. My achievements have been covered in YouTube videos that have amassed millions of views.