RAYAN ISRAN

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Software developer and researcher with 4+ years of experience in haptics, neurotech, and accessibility design. Familiar with developing wearable devices, UX research, electronics, and software interfaces.

EDUCATION

MSc Electrical and Computer Engineering, **McGill University**, Montréal, Canada. 2020 - 2023
- **GPA: 3.81/4.00**. NSERC & ISED Grant Recipient (CAD 55,000 funding).

BE Mechatronics, Shaheed Zulfiqar Ali Bhutto Institute of Science & Technology, Karachi, Pakistan 2013 - 2017
- **GPA: 3.66/4.00**. Silver Medalist. 4x Scholarship Recipient. Outstanding Student Award.

ENGINEERING EXPERIENCE

Embedded Software Engineer 2023 - Present
AAVAA *Montréal, Quebec*

- Part of a 3-man embedded systems team developing **assistive-tech wearables** to control a headmouse
- **Developed drivers** for sensors (IMUs, haptics) in **C firmware** for STM32/nRF microcontrollers
- **Developed Python GUIs** to tune parameters on the fly for sensors
- Wrote algorithm to minimize noise in signals captured by biosensors
- Designed and coded Python pipeline to **benchmark** filtering algorithms to minimize jitter and delay
- Participated in brainstorming sessions to **improve user experience** and system performance of wearables
- **Troubleshooting and assembling** PCBs for 3 types of IoT wearables (headband, glasses, and earbuds)

Software Developer 2021 - 2023
Shared Reality Lab, McGill University *Montréal, Quebec*

- Collaborating with 20+ other researchers and developers on a web accessibility project.
- Participated in **system architecture** design and **deployed** audio-haptic renderings of web graphics
- Built API to **integrate haptic devices** into web extension
- Developed, maintained, and documented tools to **prototype touch-based audio-haptic experiences**
- Created algorithms to quantify and minimize jitter in time-sensitive haptic control loop by 10%
- Conducted user studies and qualitatively analyzed data to report effectiveness of haptic devices
- Participated in **code reviews, design evaluations, and brainstorming sessions**
- **Demoed tools** to **industry partners** for collaboration
- **Maintained and resolved** issues on project GitHub board

Systems Engineer 2017 - 2019
Avery Dennison *Karachi, Pakistan*

- **Provided equipment installation and training** to client across Pakistan. Led to 16% growth in sales
- **Awarded** Globally Certified Service Engineer for service and clearing rigorous tests
- **Collaborated** with product engineers and cross-functional teams across Asia to develop solutions for clients
- Provided **maintenance support** on ad-hoc basis by phone, remote software, and on-site visits
- **Demonstrated** products and training material to 10+ prospective clients
- **Supervised** in-house production processes to support reliability and performance by 15%
- Wrote scripts to **automate tasks** for sales team to save 10 man-hours of manual data wrangling/week

Electronics Designer 2016 - 2017
BE Capstone Project *Karachi, Pakistan*

- Led design, **assembly**, and **construction** of coastal ocean buoy device with 2 other researchers
- **Ideated** and built dual-purpose design for power generation or data collection
- **Developed telemetry system** to transmit sensor data through radar to remote station with radio links

TECHNICAL SKILLS

Programming: Python, TypeScript, Java, C, C++, C#, MATLAB
Familiar with: Git, VS Code, Scripting, DataViz, UI/UX, Code Review, Scrum/Agile Methodologies, IoT/wearable devices, I2C/SPI/UART/ZigBee/BLE Protocols, Electronic Equipment

SELECTED DESIGN PROJECTS

HandsUp: Integrating Real-World Gestures into Digital Meetings. Presentation Link. 2020
- **Designed tool** aimed at improving interactiveness in online classrooms
- **Created wearable** that translates hand gestures into highly visible indicators for videoconferencing tools

Watchface for Garmin Devices. 2021
- **Developed** and deployed watchface for Persona 4 using Monkey C and Garmin SDK. Image Link.
- Features automated weather, heartrate, weather using OWM API (including automatic updates), steps, distance, icon and background effects depending on season and temperature

Vibrotactile Stimuli System 2019
- **Developed** wearable prototype to measure vibrotactile acuity on arm.
- **Conducted** experiments to evaluate hypotheses and analyzed data to assess statistical significance of parametric measures

Automation & Analysis Tools 2019
- **Implemented scripts** to scrape, clean, and export data for gaming website
- **Generated** infographics (heatmaps, charts) to explore statistical trends of video game records
- **Co-developed** SMS-based alert system using Twilio API service to send notifications of new records

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, Quebec, 2021, pp. 590-590, `https://ieeexplore.ieee.org/document/9517255`.

MENTORING EXPERIENCE

Teaching Assistant, Design Principles and Methods, McGill University 2022
- Supervised and mentored students for robotic-system project for course.
- Graded and provided feedback to students on weekly lab exercises.

Teaching Assistant, Embedded Systems, McGill University 2021
- Designed and graded microcontroller-based lab assignments.
- Instructed on communication protocols, finite-state machines, I/O, interrupts, control systems.
- Created test bank of questions and conducted oral quizzes for students.
- Managed course logistics and student discussions on ePortal system.

Mechatronic Laboratory Engineer, SZABIST 2019 - 2021
- Designed and tested weekly experiments and lab-based projects for mechatronic courses.
- Conducted technical evaluations of equipment and maintained item inventory.
- Conducted labs, and designed and graded exams to 100+ students.
- Performed demonstrations on sensors, microcontrollers, and industry-grade equipment and software.
- Mentored students on mechatronic system design projects.

AWARDS AND SCHOLARSHIPS

Scholarship Recipient, McGill University *2020 - 2023*
Presenter, PyCon Pakistan 2019, "Data Visualization with Python." *2019*
Globally Certified Service Engineer, Avery Dennison *2018*