Arjun Gopkumar

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PROFESSIONAL PROFILE

Armed with a passion and curiosity for learning, I love to challenge myself by thinking out of the box resourcefully by using the knowledge imbibed from previous learnings cumulatively and effectively in a creative manner. I am passionate about what I do and enjoy learning and taking up new challenges.

WORK EXPERIENCE

Teaching assistant for Product Engineering (IDE , TU Delft)

3 months

- Creating electronics kits for the course
- Testing and providing feedback for the course material

Project staff at Center For Product Design and Manufacturing (CPDM, IISc)

https://www.jamesdysonaward.org/2021/project/lifebox

2 years

- Lead Electronics Engineer on LifeBox, an active organ perfusion container for transplant.
- Developed embedded hardware firmware from scratch, adhering to IEC and ISO standards.
- Conducted hardware and software tests to ensure device integrity and performance.
- Involved in the development of an affordable insulin pump.

Internship at CPDM (IISc)

6 months

- Worked on the InsuFlo project, designing an affordable insulin pump for Type-1 diabetic patients.
- Developed embedded hardware for a mechatronic system, including software tests and assembly tests.

Internship at Center for Brain Research (IISC)

3 months

- Contributed to the development of a full-stack application.
- Completed objectives, including efficient front-end and back-end development, offline and online sync, and database management.

Internship at Fracktalworks - 3D printers

3 months

- Tasks included creating embedded system architectures, electronic prototyping, PCB designs, component selection, and firmware uploading.
- Prototyping of a DLP printer

Centre for IoT intern

3 months

Website: https://www.iot.pes.edu/

- Developed an end-to-end application for mask policy enforcement in buildings using deep neural networks - mobileV2.
- Involved in face detection, mask detection using a trained model, and maintaining a database of offenders

PESU-IO SME for Hardware Prototyping

1 month

- Created and delivered a comprehensive course focused on hardware design and prototyping.

SKILLS

Tools

- **CAD tools:** Solidworks, Fusion 360, Onshape
- **Rendering tools:** Keyshot

Electronics and engineering tools

- Programming Languages: Python, C, C++, JavaScript,
- Frameworks: Qt ,Bootstrap, Django,.
- Circuit design: KiCAD, Webots, Eagle CAD
- MCU platforms: AVR, STM32, ESP.

INTERESTS

Medical device design, Rapid Prototyping, Designing for repairability and circularity

PUBLICATIONS

1. Novel Methods to Understand the Temporal Nature and Accuracy of Delivery for Insulin Infusion Pumps - Journal of Diabetes Science and Technology- 2022 [Link]
2. In-Vitro Accuracy Evaluation Of A Novel, Affordable Insulin Pump - Diabetes Technology & Therapeutics - 2022 [Link]
3. Application of NoSQL technology to facilitate storing and retrieval of clinical data using IndexedDb in offline conditions - ICRITCSA - 2019 [PDF].

AWARDS

1. **Lexus design award 2021**
2. **NIAS MIYA prodigy fellow** 2016-17
3. Brahm Prakash Memorial Materials Quiz Regionals**-Winner**
4. Microsoft Incito 2018 - **Winner**
5. IIT Bombay MEDIC - **Best Novel point of care device**
6. IIT Madras Shastra - Prototyping with Arduino -**Winner**,
7. IIT Madras Shastra - Best policy proposal for education
8. Equinox Space quiz - **Runner up**
9. Siemens Smart X sustainability hack 2022 - **6th** place
10. Microsoft Hashcode 2018,2019- top 10

ADDITIONAL COURSES

1. Product Design: The Delft Design Approach(EdX)
2. Machine learning workshop at IISc (duration 2 days)
3. machine learning workshop PES(4 weeks). Ethical hacking at PESU(4 weeks).
4. Robotic bot making at PESU(4 weeks). Image Recognition online course by BITS Goa (5 weeks)
5. Blockchain Technologies(UC Berkely-EdX)

EDUCATION

- **TU Delft** (current), Faculty of Industrial Design
  - MSc. Integrated Product Design

- **PES University** (2017-21)
  - B.Tech Electronics and Communication Engineering (Specialization in VLSI)
  - CGPA: 7.81
- **National Public School, Rajajinagar** (2003-2017)
  - 10th Grade (CGPA: 9.8)
  - 12th Grade (Percentage: 93.4%)

PROJECTS

Sanichlor chlorinator

- Developed a hand-manufacturable chlorinator for rural water disinfection.
- Achieved a low-cost solution under $30 for full manufacturing and installation.
- Collaborative design with local stakeholders, promoting community empowerment and sustainable water disinfection.

Repairable headphone project

- Created a repairable revision for the Sony WX100XM-5
- Analysed repairability with various indexes like the FRI and iFixit score

Speech synthesizer for the deaf and dumb using the articulatory system for European languages
Report**: [PDF]**
Bachelor Capstone Project

- Developed an inexpensive, non-penetrative device to aid people with speech impairments.
- Explored the relation of frequencies through an experimental setup using a microcontroller, hall sensors, and analogue IR sensors.
- The relation of frequencies taken as a combination of the jaw, and tongue positions were explored and through an experimental setup using a microcontroller

Autonomous co-bots for hospital environments
[Abstract]

- Proposed an autonomous system of collaborative robots for medical field tasks to minimize human contact and aid in disease prevention.
- Simulated robots on Webots, presented as part of the Intel student contest 2020.

Building a Low- cost- SILAR MACHINE

- Created a low-cost SILAR (Successive Ionic Layer Adsorption and Reaction) machine.
- Machine can create 2-4 slides with coating simultaneously with this machine.

ECID(Enhanced computer interaction for the disabled)

- A simple solution to helping patients who have some sort of limb impairment (Lower body paralysis, Limbless, Multiple Sclerosis etc.).
- Uses an IMU placed on the head to control mouse movement and gestures

Gesture-controlled drone

- Design to eliminate the learning curve which comes with learning how to pilot a drone, creating a more intuitive system of piloting.
- The project is 3 fold: a Micro drone, with a camera, a Controller which is gesture-based, VR headset coupled with the camera.