

# KOSMA INOJ AKALANKA

Survontie 46 A 3, 40520, Jyväskylä, Finland

☎ +358 41 793 0909 ✉ [inojakalanka@gmail.com](mailto:inojakalanka@gmail.com) [in linkedin.com/in/inoj-akalanka/](https://www.linkedin.com/in/inoj-akalanka/) 🌐 [Portfolio](#)

## Education

### University of Moratuwa

*Bachelor of Science in Engineering (Honours)*

Nov. 2016 – July 2021

Colombo, Sri Lanka

- **Major:** Biomedical Engineering
- **Class:** Second Upper
- **GPA:** 3.54
- **Final Year Project:** Measurement of Presence in Virtual Reality Using EEG

### Richmond College

*General Certificate of Education Advanced Level*

Aug. 2013 – Aug. 2015

Galle, Sri Lanka

- **Results:** Combined Mathematics (A), Chemistry (A), Physics (B)
- **National Rank:** 336
- **District Rank:** 39
- **Z-Score:** 2.2557

## Experience

### binare.io - IoT pentester's must-have tech

*Full-Stack Developer*

Jan. 2024 – Present

Jyväskylä, Finland

- Working as a Full-Stack Developer..
- Gained expertise in **containerize web-app development**, **API development** and **message broker development**.
- Key projects : The LAZARUS Project, FastCVE.

### Synopsys Inc

*Research and Development Engineer II*

June 2021 – Dec. 2023

Colombo, Sri Lanka

- Worked at ZeBu (leading FPGA based emulation platform by Synopsys) Engineering Operations and Analytics team.
- Gained expertise in different components of **ZeBu** such as Frontend, zTopBuild, zCoreBuild, zPar, zNetgen, zTime, zFPGA. Also **Automation**, **Data Analytic** and **Web Development** too.
- Worked on end-to-end individual/team projects which improved quality and performance aspects of ZeBu. Also supported existing projects and **regression convergence** too.
- Key projects : Redundant C++ header cleanup using IWYU, LCOV Dashboard, Critical Benchmark Analysis Report Generator, Fractal Branch Integration, L1 Bulk Breakage Analyzer, Quality Monitoring Systems, Maintaining Compile Time Benchmark Comparative Analysis View & ZeBu Regression Scheduler.

### LE Robotics Pvt Ltd

*Research and Development Engineer - Intern*

July 2019 – Dec. 2019

Colombo, Sri Lanka

- Worked on projects related to a middle scale industrial Robotic Arm Development.
- Gained expertise in **Embedded Systems Development**.
- Key projects : Researched to enhance YOLO object detection algorithm using ARM Assembly language, Developed a customized Printed Circuit Board (PCB) and firmware for a Torque Sensor, Implemented a C# application to calibrate a camera automatically before it is used for object detection.

## Projects

### Message Broker Development | RabbitMQ, Docker, Pika

Jan. 2024

- A message broker which can support multiple services and users needed to be developed.
- Collaborated with CTO in order to understand the requirement and the architecture of the message broker.
- Utilized **RabbitMQ**, **Docker**, **bash** shell scripting, **Python** and **Pika** module for the development.

### Redundant C++ header cleanup using IWYU tool | C++, Clang, IWYU tool, CI/CD pipeline

Nov. 2023

- There was a need to clean redundant header inclusions in ZeBu source code files which were mostly written in C++.
- **IWYU (Include What You Use)** tool which is compatible with **Clang** compiler was finalized to use in this purpose.
- Collaborated with ZeBu DevOps team to understand how IWYU could be utilized with ZeBu build (compiling) commands and successfully able to remove redundant headers with manual effort for chosen C++ source code files while gaining size reduction in .o files.
- Started planning an automation using Python as there are lots of source code files to be cleaned up.

### LCOV Dashboard | *XMLHttpRequest, Shell scripts, Cron jobs*

Aug. 2023

- Centralized page was essential to monitor line coverage data and its interpretations for every component in ZeBu.
- Collaborated with coverage team and utilized **Coverage API**, **Jira API** and **Owners API** to gather basic data.
- Identified incorrect owners assigned to multiple components while gathering data and started a separate initiative on correcting them also.
- Implemented dashboard showing useful raw/interpreted data and analytics.
- Utilized **Bootstrap**, **CSS**, **JavaScript**, **XMLHttpRequest**, **Google Charts**, **HTML** in the front-end and **PHP**, **Python**, **SQLite**, **Shell scripts**, **Cron jobs** in the back-end.

### Critical Benchmarks Analysis Report Generator | *Bootstrap, JavaScript, PHP, Python, SQLite*

June 2023

- An automation was essential to generate an email report which was done manually by ZeBu Backend Product Verification(PV) team.
- Collaborated with above PV team in order to understand the requirements.
- Developed a system with User Interface (UI) where anyone can submit a source excel sheet and generate the email report.
- Email Report contained charts and tables which summarized findings from analyzing critical benchmark data.
- Utilized **HTML**, **Bootstrap**, **CSS**, **JavaScript** for UI Development and **PHP**, **Python**, **SQLite**, **Jira API**, **internal APIs** to generate email report.

### Fractal Branch Integration | *Perforce, C++, Regression testing*

April 2023

- There was a need for a new branch of a existing release where developers able to checkin their code and build quickly related to an important project call Fractal. So, current release was then branched to a new branch called "Fractal Branch".
- Provided support for managing the new branch where changes from the release branch need to be integrated and build manually in collaboration with a folk from USA time-zone.
- Managed an excel sheet, wiki page and teams channel where new builds' info were updated and announced.
- Utilized **Perforce** commands, **C++** knowledge and **Regression testing** while integrating, resolving conflicts, building the executable and submitting changelists. Had to work with folks from different time-zones like USA, France, Taiwan and India when there were conflicts in changelists while resolving.

### Maintaining CTBM CAN and CTBM ZRS | *Perl, JSON, YAML*

Feb. 2022

- Supported new updates/changes in Compile Time Benchmark (CTBM) Comparative Analysis View (CAN) and CTBM ZeBu Regression Scheduler (ZRS) systems according to the requests.
- CTBM CAN contains **perl** code base and had to learn **Perl** in order to cater requests regarding that.
- CTBM ZRS contains **JSON**, **YAML** formats and had to learn them in order to cater its requests.
- There were some special requests to change few sections of above systems which I am not very much familiar with. So, had to experiment and find solution by researching.

### Objective Measurement of Presence in Virtual Reality (VR) | *C#, Unity, Blender, Virtual Reality*

June 2020

- This is the Final Year group project, conducted at the University.
- Utilized VR development, 3D modeling, bio-signals (electroencephalogram, electrocardiogram) and statistical knowledge in order to research for a measurement to quantify presence (someone's engagement) in Virtual Reality.
- Took part in 3D modeling VR Objects using **Blender**, designing questionnaire in **Unity** for VR and conducting the **research** study.
- Analyzed bio-signals collected using statistical methods and published an article with the findings.

### YOLO optimization using ARM Assembly | *C++, In-line Assembly, Processor Architecture*

Nov. 2019

- There was a need in the Robotic Arm which was developing, to identify objects' interventions efficiently using Raspberry Pi 3B+ when it is moving in its pre-defined trajectory.
- Studied **ARM ISA** in order to find assembly level instructions so that mathematical calculations can be optimized using parallel computations and findings were presented to team members using PowerPoint.
- Applied **ARM architectural**, **microprocessor** and **C++ programming** knowledge in order to optimize You Only Look Once (YOLO) real-time object detection algorithm so that it can be efficiently run on Raspberry Pi 3B+.
- Cooperatively developed **in-line assembly** code in Code Blocks IDE.

### PCB & Firmware for a Torque Sensor | *C, Electronics, PCB Designing, SPI, I2C, UART*

Sept. 2019

- There was a plan to develop a Torque Monitoring System in order to monitor torque values of the joints in a Robotic Arm. Initially PCB and its firmware developments were finalized.
- Utilized electronics (**microcontroller**, **ADC**, **USB-UART converter** etc), PCB designing (**OrCAD**) knowledge and **C programming** knowledge in order to develop a compact **PCB** and its firmware to receive quantified torque values from a torque sensor and send them to a PC for further analysis.
- Also learned communication protocols such as **I2C**, **SPI**, **UART**.

## Technical Skills

---

**Languages:** Python, C++, C, C#, Perl, HTML/CSS, JavaScript, PHP, SQL, csh, bash

**Developer Tools:** Unity, Blender, VS Code, Code Blocks, Visual Studio, Atmel Studio, MATLAB, Scilab, Vim, Jira

**Technologies/Frameworks:** Docker, RabbitMQ, FastAPI, CI/CD, Linux, Perforce, GitHub, Bootstrap, Symfony, Latex

## Publications

---

- T. T. N. Bahavan, S. Navaratnarajah, D. Owinda, I. Akalanka, R. Peiris, and A. D. Silva, "Towards an objective measurement of presence, place illusion, and plausibility illusion in virtual reality using electroencephalography." Virtual Reality, 2023, doi: 10.1007/s10055-023-00815-x.  
<https://link.springer.com/article/10.1007/s10055-023-00815-x>

## Professional Qualifications

---

**Institute Of Engineers Sri Lanka - IESL**

Associate Member

May 2022 – Present

IESL

## Honours / Awards

---

**Dashboard Competition - 2nd Place**

*Auto Checkin Approval (ACA) Dashboard*

**Sept. 2023**

*Synopsys Inc*

**Above & Beyond Team Award**

*Excellent team effort to improve ZeBu R&D regression TAT with increased coverage*

**Aug. 2023**

*Synopsys Inc*

**Execution Excellence Recognition**

*Successful support for Fractal integration*

**June 2023**

*Synopsys Inc*

**Execution Excellence Recognition**

*Excellent Team Work for MH L0, CCA, L0/L1 Prime*

**May 2023**

*Synopsys Inc*

**Above & Beyond Individual Award**

*Designing and implementing of Quality Monitoring Systems and continuous support in maintaining*

**Mar. 2022**

*Synopsys Inc*

**Execution Excellence Recognition**

*Enhancing CTBM and Automation cons*

**Nov. 2021**

*Synopsys Inc*

## Extracurricular

---

**Swimming**

*Trained as a swimmer. Participated school level swimming meets and placed in couple of competitions.*

**2012 – Present**

**Life Saving**

*Completed Basic, Elementary, Intermediate and Bronze levels and became a Professional Life Guard.*

**2012 – Present**

## References

---

Subramanian Chebiyam

Dir. R&D - Systems Design Group

Synopsys - Sunnyvale, US

☎ +1 408 300 4681

🌐 [linkedin.com/company/synopsys](https://www.linkedin.com/company/synopsys)

✉ [chebiyam@synopsys.com](mailto:chebiyam@synopsys.com)

Srinivasa BT

R&D Engineer Sr. Staff - Systems Design Group

Synopsys - Bangalore, India

☎ +91 86609 76639

🌐 [linkedin.com/synopsys](https://www.linkedin.com/company/synopsys)

✉ [sbt@synopsys.com](mailto:sbt@synopsys.com)

Vaishnavi Sundaralingam

Mgr. II R&D - Systems Design Group

Synopsys - Colombo, Sri Lanka

☎ +94 77 143 9146

🌐 [linkedin.com/synopsys](https://www.linkedin.com/company/synopsys)

✉ [sundaral@synopsys.com](mailto:sundaral@synopsys.com)

Sahani Goonetilleke

R&D Engineer Sr. I - Systems Design Group

Synopsys - Colombo, Sri Lanka

☎ +94 77 162 8596

🌐 [linkedin.com/synopsys](https://www.linkedin.com/company/synopsys)

✉ [reginas@synopsys.com](mailto:reginas@synopsys.com)