

# Libin N George

<https://libin-n-g.github.io/MyProfile/>

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## EDUCATION

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- **University of Arizona** Tuscon, AZ  
*Master of Information Science: Machine Learning; GPA: 4.00* Aug. 2023 – May. 2025
- **Indian Institute of Technology** Palakkad, Kerala, India  
*Bachelor of Technology in Computer Science and Engineering(with Honors); GPA: 9.07/10.0* Aug. 2015 – June. 2019

## EXPERIENCE

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- **VMware Software India Private Limited(VMware by Broadcom)** Bangalore, India  
*Software Engineer* March 2022 to August 2024
  - **Python Django Framework:** I have worked on the Python Django framework and debugged many performance issues related to data caching, API performance, etc.
  - **Go Lang Beego Framework:** I have converted APIs from Python Django to the GoLang Beego framework. Special care was taken not to change the API behavior and also increase the performance. I have solved issues based on race conditions and performance degradation.
  - **Distributed Logging and Error Capture:** I have worked on a project capturing the errors during upgrade workflow. Context tracking for easier debugging of the error between different services is also implemented.
  - **Go Lang Unit Test:** Created Unit tests using different libraries like MockGen, sqlMock etc.
- **ITS Planners and Engineers** Hyderabad, Telangana, India  
*Senior Associate - Software Engineer* May 2019 - Feb 2022
  - **Adapter - IOT:** Developed java adapter that can read data from multiple interfaces of different detectors like RTEM loop detector, radar detector, laser detector, etc. simultaneously.
  - **RMI API:** RMI APIs where developed in python and java for sharing UTMC live and static data from servers.
  - **Logging Modules:** Developed Python logging modules enabling centralized logging from multiple devices and servers.
  - **Tracking Travel Time:** Designed algorithms for tracking the travel time and estimated time for Public transport systems from live GPS data.
  - **Python Framework for IOT Data collection.** : Designed and developed Python framework for Traffic Intelligence Module(TIM) with multiple sub-modules which can be replaced as required providing flexibility in communication protocols and hardware components.
  - **gRPC framework:** Creating gRPC and FAST API for UTMC data sharing.
  - **Scheduler System:** Designing a system for scheduling and executing different commands based on requested time duration and user privilege.
  - **Python Guidelines:** Taking initiative for formalizing Python coding and documentation standards for the entire company
  - **Mentoring interns - Video Processing:** Mentoring interns for the video-processing project for detecting vehicles using the Non-Max Suppression method.
- **Timken Engineering and Research India Private Limited** Bangalore, India  
*Summer Intern* May 2018 - Jul 2018
  - **Web Application in .NET:** We have worked on the Project "Seal Selection Tool" which helps Timken users to select or find a seal. The work was mainly focused on the following Technologies: VS 2015, ASP.Net MVC, C#, .NET, JQuery, TFS 2015, SQL Server 2014, and SQL SSIS Package.
- **Hamon Technologies LLP** Bangalore, India  
*Software Intern* May 2017 - Jul 2017
  - **UZBL replacement using pygame:** We have used the pygame library to replace the UZBL. As a learning outcome I have improved my programming skills in Python, and learned to code according to PEP-8 style for Python code (used in Pylint)
  - **Porting the Python library psutil to C (cpslib):** We have worked on a project that ports the Python library to the C library. We have worked and ported the Psutil in both Windows and Linux platforms. We have also written unit tests for the same library.

## PROJECTS

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- **Self-Supervised 3D Human Pose Estimation** University of Arizona  
*Guide: Dr. Eung Joo Lee* 2025
  - **Objective:** Developing a self-supervised learning model for 3D human pose estimation in clinical operating rooms.
  - **Contribution:** Conducting an ablation study and contributing to the architectural design of the model, focusing on Kolmogorov-Arnold Networks (KANs) and GraphKAN.
  - **Learning Outcome:** Gained experience in model interpretability, deep learning architectures, and optimization techniques for pose estimation. Evaluating performance using the MVOR dataset.
- **Wheezing Sound Classification Using Self-Supervised Learning** University of Arizona  
*Guide: Dr. Eung Joo Lee* 2025
  - **Objective:** Developing a self-supervised learning model to classify wheezing sounds for respiratory disease detection.
  - **Contribution:** Implementing self-supervised learning techniques to extract meaningful representations from unlabeled audio data and improve classification accuracy.
  - **Learning Outcome:** Gained experience in audio signal processing, self-supervised learning strategies, and deep learning models for healthcare applications.
- **Multilabel Emotion Detection System using Neural Networks** University of Arizona  
*Guide: Dr. Liang Zhang* Aug 2024 - Dec 2024
  - **Objective:** Develop a multilabel emotion detection system using neural networks to classify emotions such as admiration, amusement, gratitude, love, pride, relief, and remorse from text data.
  - **Learning Outcome:** Applied deep learning techniques, including pre-trained embeddings GloVe and neural network architectures LSTMs, CNN for accurate multilabel classification. The project focused on evaluating model performance using micro F1 score for multilabel emotion detection from text data
- **Secure Linux Voice Command Controller** IIT Palakkad  
*Guide : Dr. Albert Sunny* Aug 2018 - Apr 2019
  - **Objective:** Create a background application that can identify users by basic voice commands and execute them.
  - **Learning Outcome:** Different methods for Voice Activity Detection, Speech Recognition, and Speaker Recognition are explored. We created a Linux application (runs in the background) to recognize the person and execute the configured commands.
- **Loan Default Prediction Using Machine Learning** University of Arizona  
*Guide : Prof. Cristian Román-Palacios* Jan 2024 - May 2024
  - **Objective:** Developed a machine learning model to predict loan defaults, helping financial institutions identify high-risk customers and mitigate risks.
  - **Learning Outcome:** Gained expertise in data preprocessing, exploratory data analysis, model training, and evaluation using advanced algorithms like Gradient Boosting. Enhanced recall and precision through PR curve analysis and threshold optimization. Mastered the use of various algorithms such as Gradient Boosting, Logistic Regression, and LDA, alongside hyperparameter tuning for performance optimization.
- **MASTI - Messenger Application for Student-Teacher Interaction** IIT Palakkad  
*Guide : Mr. Ramaswamy Krishnan-Chittur, Senior Software Engineer, Microsoft Corporation* 2018
  - **Objective:** An application that facilitates interaction between multiple students and a teacher.
  - **Learning Outcome:** Learning Software Development Cycle (including Architectural Design (Flowchart), Data Design, Human Interface Design.etc). We have used .NET C# to create the application.
  - **Design Patterns:** Used Delegation pattern, Singleton pattern. Chain of Responsibility etc.
- **Document Summarizer** IIT Palakkad  
*Guide : Dr.Mrinal Kanti Das* Aug 2017 - Sep 2017
  - **Learning Outcome:** A mini Project that creates a summary for a given document. This project uses **Text Rank Algorithm** for finding the summary for a given document
- **Interactive Classroom over the network** IIT Palakkad  
*Guide : Dr. Piyush P. Kurur* Mar 2018 - Apr 2018
  - **Objective:** Create a desktop application that can broadcast video to students while allowing the students to interact with the lecturer in between.

- **Learning Outcome:** This mini project aims to make a Python app that can be used to have lectures taken remotely while allowing the students to interact with the lecturer. This project Implemented screen share, messaging, and video calling for an Interactive classroom experience. The Project uses real-time Transport Protocol (RTP) and Real Time Streaming Protocol (RSTP).

## • Minesweeper-CLI

IIT Palakkad

*Guide : Mr. Ramaswamy Krishnan-Chittur, Senior Software Engineer, Microsoft Corporation*

2015

- **Objective:** Make Minesweeper Game using C programming.
- **Learning Outcome:** Learning Software design strategy (including Architectural Design (Flowchart), Data Design, Human Interface Design.etc)

## PROGRAMMING SKILLS

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- **Languages:**C, C++, C#, Java ,Python, GoLang, R, Haskell, PHP, HTML, CSS, SML, C CUDA - Parallel programming, HackLang, Lua Scripting
- **Tools and Technologies:** GIT, MATLAB, MySQL/ MariaDB, MongoDB, PostgreSQL, SQL Server 2014, Visual Studio, Business Intelligence Development Studio (BIDS), Emacs, Vim, R Studio, Latex, SSH, Nginx, Docker, Docker swarm, Kubernetes, AWS, Google Colab, TensorFlow, PyTorch
- **Frameworks:** .NET, MVC(Model View Controller) - (.NET MVC, Laravel), Python Django FrameWork, GoLang Beego framework, MicroServices Architecture.

## EXTRACURRICULAR

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- Member of system administration support team in from 2015 to 2019 in IIT Palakkad Computer Lab
- Volunteer in Workshops for Linux installation and FOSS Workshop at IIT palakkad
- Teaching students as a part of NSS activity
- **Strengths:** Positive Attitude, Hardworking, Fast Learning, Curious Learning.