

# Prachii K

+91 9110615382

✉ [prachii.ku@gmail.com](mailto:prachii.ku@gmail.com)

<https://asaiyru99.github.io/asaiy/>

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## RESEARCH INTERESTS

Signal Processing, Human-Computer Interaction, LLMs, Machine Learning

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## WORK EXPERIENCE

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April 2023– **Independent Researcher in LLMs and NLP**

Present -Generative AI engineer (LLMs) that is researching and developing a framework that integrates the artificial perception of robots using emotion detection in audio and as well as active listening behaviors.

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Jun 2022 – **Outdu Mediatech Private Limited (Software and Design Engineer)**

April 2023 -I worked on developing advanced computer vision-based software, as well as integrating ISPs with our in-house IP cameras in order to build autonomous surveillance systems  
-Integration of EC components (MCU, Intel NUC) to form the entirety of a driver fatigue management system.

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Apr 2022 – **Janitri Innovations (Signal Processing Intern)**

Jun 2022 -I fine-tuned Janitri's algorithms for R-Peak detection in ECG signals for fetal monitoring. Visited hospitals to collect ECG data of mother and child.

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Mar 2021 – **Outdu Mediatech Private Limited (Intern)**

Aug 2021 -I worked as an intern (to be later absorbed into the company as an employee) to explore the uses of state-of-the-art transformer algorithms for advanced image processing for the company's night vision technologies.

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Sep 2019 – **RVCE Coding Club**

Aug 2021 -As a member of RVCE of Coding Club, my team and I would take up C and C++ projects on commission for new startups. I became a member after winning the RVCE hackathon.  
-Would set exams and interview students who wished to join our club. On average every year, we had multiple applicants (close to 100) take exams.

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## EDUCATION

May 2020– **Massachusetts Institute of Technology (MITx edX)**

Present Micromaster's Degree in Statistics and Data Science (2/4)  
-6.86x: Machine Learning with Python-From Linear Models to Deep Learning, May 2020  
-6.431x: Probability – The Science of Uncertainty and Data, MITx on edX, Dec. 2020

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Aug 2017 – **R. V. College of Engineering (RVCE)**

Aug 2021 Bachelor of Engineering in Electronics and Communications Major Thesis: 8.0/10.0

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Jul 2015 – **Jyothi Nivas Pre-University**

May 2017 High School Diploma

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## RESEARCH AND PROJECTS

Nov 2021 **Image Reconstruction using Orthogonal Matching Pursuit and Least Angular Regression**

Reconstruction of a noisy image (which visually denoises) using two different algorithms that solve for sparse solutions, OMP and LARS. The two algorithms are analyzed through varying non-zero coefficients measuring their PSNR and SSIM values and studied their dependencies.

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Jun 2021 **Speech Emotion Recognition System using Convolutional Neural Network with PCEN**

A speech emotion recognition system was built using 1-D convolutional neural networks that obtained an accuracy of 85.7% by using a procedure named PCEN after the obtaining the melspectrogram. Proves the limitations of the log transform used in the logmelspec.

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Oct 2020 **Designing an Encryption system based on Chaos Theory and Neural Networks**

Led a project that worked on a complex encryption system that uses chaotic neural networks, which function on the logistic map under deterministic chaos. The project was able to

chaotically generate an encrypted binary sequence.

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Sept 2019	<b>Credit Card Fraud detection system using ML and SMOTE</b> A fraud detection system that was created using the random forests algorithm and implemented SMOTE to balance the data set and predict fraud on transactions.
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Oct 2018	<b>High Fidelity Valve Amplifier</b> A high fidelity, seven vacuum-tube amplifier was built by using only capacitors and resistors. Transformers and a tube rectifier. The amplifier was modelled on a Magnavox and used 600V to operate. The audio delivered was of high quality and more enjoyable in comparison to certain solid-state amplifiers.
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## **PUBLICATIONS HONOURS AND ACHIEVEMENTS**

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<i>IJERT</i>	Exploring Image Reconstruction with Orthogonal Matching Pursuit and Least Angle Regression <b>Prachii Kumar</b> <i>2022 International Journal of Engineering Research and Technology, November Issue</i>
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<i>ISPACS</i>	Comparative Analysis of Features In a Speech Emotion Recognition System using Convolutional Neural Networks <b>Prachii Kumar</b> , K. S. Shushrutha <i>2021 International Symposium on Intelligent Signal Processing and Communication Systems</i>
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<i>Parsec 2020</i>	Awarded runner up at IIT Dharwad's Parsec in their Robotics' competition for constructing an autonomous miniature vehicle that cleared their obstacle course.
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<i>RVCE 2019</i>	Awarded the winner of RVCE's annual ML and AI Hackathon in 2019 Credit Card Fraud detection system using ML and SMOTE.
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Aug 2018	Began a personal organization that offered free counselling for mental health betterment in 2018 named Therapeach.
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## **SKILLS**

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### **Programming Languages**

C (Professional), C++ (Professional), MATLAB(Intermediate), Python (Intermediate), R (Beginner)

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### **Toolboxes and Environments**

CLion, Code Composer Studio, OpenCV, Latex, TensorFlow, Embedded Linux (Professional)

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### **Spoken Languages**

English (fluent), Kannada (Intermediate), Bahasa Indonesia



