Meet Haria | **153079029**
Electrical Engineering | **M.Tech.**
Indian Institute of Technology Bombay | **Male**
Specialization: Electronic Systems | **DOB: 27/08/1992**

Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2018	8.89
Undergraduate Specialization : Electronics and Telecommunication				
Graduation	Mumbai University	K.J. Somaiya College of Engineering	2014	72.88
Intermediate/+2	Maharashtra State Board	Birla College	2010	83.83
Matriculation	Maharashtra State Board	Model English School	2008	91.69

AREA OF INTEREST

Digital Signal Processing, Image Processing, Machine Learning, Data processing, Digital System Design

SCHOLASTIC ACHIEVEMENTS

- Secured **99.45** percentile in Gate ECE out of approx **1.72 lacs** candidates. *(2015)*
- Secured **99.37** percentile in Gate ECE out of approx **2.16 lacs** candidates. *(2014)*
- Awarded with **Sir Ratan Tata Scholarship** for securing 2^{nd} position in 3^{rd} year of Engineering. *(2013)*

PUBLICATIONS

- B. Parmeshwar, H. Meet, B. Yash, S. Utkarsh, S. Brijesh and G. Vikram, "**A Scattering Wavelet Network Based Approach to Fingerprint Classification**", submitted to Pattern Recognition Letters, Elsevier, 2017.

MAJOR PROJECTS

- **Multimodal Biometrics: (M.tech Thesis)**
  - **Estimation of the accuracy of different fingerprint extractors and matchers over preprocessed touchless fingerprint images and comparing with the proposed one.**
  - **Visible Light Iris Recognition and a novel approach to Iris classification using Wavelets.**
  - **Biometric Ear Recognition using Scattering Network System.** *(May '17 - Present)*

  Guide: Prof. V.M. Gadre, Electrical Engineering

  Completed Work:
  - Collected the **database of touch-based and touchless fingerprint images** from **200** subjects comprising a total of **800** images.
  - Compared the performance of touch-based and touchless fingerprint systems using the existing and **proposed (Monogenic Wavelet based) preprocessing** algorithms and evaluated the EER for the existing feature extractor and matcher using the preprocessed images.
  - Investigated the **Color Iris Recognition** using the **NIR Iris Recognition** algorithms on standard color Iris databases and obtained comparable results.

  Ongoing & Future Work:
  - Performance of **Iris Classification** using the existing Neural Networks and comparing it with the proposed **Scattering Network** System.
  - Determining the accuracy of Ear recognition using the **Geometric, Local, Holistic and Hybrid approaches** and comparing it with that of the propsed approach.
- **Android Based Spy Vehicle (B.Tech)** (*Jul '13 - May '14*)
  - Developed an **Android App** and designed a spy vehicle which is driven by any **Android smart phone** through **Wi-Fi Connectivity** over a range of about **100 meters**.
  - Captured surrounding images by a **wireless transmitter camera** and is sent over-the-air to the **wireless receiver camera unit** which is then displayed on Laptop through a TV-Tuner card.
  - Interfaced sensors like **temperature sensor(NTC)** and **Gas sensor (MQ6)** along with the 16*2 LCD matrix display to a **PIC-16F877A microcontroller**.

COURSE PROJECTS

- **Touchless Fingerprint Identification System** (*Course :- Research and Development, Jan-May '17*)
  - Developed an **Android App** which can capture finger images from **camera** or **gallery** and **fingerprint images** from **scanner device**.
  - Provided facilities for **Enrolment, Verification and Identification of fingerprints in the App**.

- Designed an **Enrolment form** in the App for the acquisition of fingerprint data and demographic information and performed **enrolment on server**.
- Performed **matching** of the sent test image, during **identification**, with the enrolled fingerprints in the server database and returned the closest match along with the score to phone.

- **MAC Protocols for M2M Communication** (*Course :- MTech. Seminar, Jan-May '16*)
  - Presented various **MAC protocols** for enhancing and motivating the development of **M2M communications** in a more efficient, reliable and secure manner.
  - Reviewed several MAC protocols specific to M2M communications and discussed the current Standard development organization's efforts to standardization and the future research scope.
- **CBIR based on Histogram Refinement and Shape, Color & Texture Classification** (*Course :- Image Processing, Sept-Nov '16*)
  - Implemented **Histogram Refinement Technique** which works well for classes having smaller variations in its images in terms of shapes and sizes of the dominating objects in the image.
  - Performed **shape, color and texture** classification for capturing miniature details.
- **SWT Based Palm Print Biometric Recognition** (*Course :- Wavelets, Mar-May '17*)
  - Developed an application in MATLAB for **palm print acquisition, preprocessing, feature extraction and matching** with the palm prints stored in the database.
  - Performed **Phase Congruency and Monogenic Wavelet** based preprocesing on palm images.
  - Implemented **Scattering Wavelet Network** for palm print feature extraction.
- **Multi Load Dimmer** (*Course: Embedded System Design, Mar-May '16*)
  - Designed and tested a **Multi-Load Dimmer** with **voltage and frequency compensation**.
  - Designed a controller using **Arduino microcontroller** and **ESP8266 Wi-Fi module**.
  - Designed an **Android Application** for controlling various household appliances using Wi-Fi.
- **PFM based Charge Pump voltage Regulator** (*Course: Electronic System Design, Sept-Nov '15*)
  - Designed a charge pump based **DC-DC voltage regulator** for **Load and Line regulation**.
  - Implemented **Pulse Frequency Modulation** on **PIC32** controller.
- **Design of 16 Bit 6 Stage Pipelined Processor** (*Course: VLSI Design Lab, Mar-May '17*)
  - Designed **RISC Arch** using **8** general purpose registers to execute **15** R, I, J type instructions.
  - Implemented hazard mitigation technique and data forwarding in order to improve the CPI.
  - Verifed the design in **FPGA Cyclone IV E** using **Altera Quartus**.
- **Design of two stage Operational Amplifier** (*Course: CMOS Analog VLSI Design, Sept-Nov '15*)
  - Designed a **2 stage fully differential telescopic cascode Op-Amp** in **180nm CMOS** technology.
  - Designed the Op-Amp with an open loop gain of **98 dB**, phase margin of **66** °, unity gain bandwidth of **89 MHz** and slew rate of **68V/us**.
  - Designed biasing circuit and **Common Mode Feedback** circuit for voltage stabilization.
- **Design of Wallace and Dadda Multiplier** (*Course: VLSI Design, Oct-Nov '15*)
  - Designed Wallace and Dadda multiplier for unsigned multiplication of two 8 bit numbers.
  - Implemented the final adder using **carry select architecture** with **square root stacking**.
- **Delay optimization of multi stage digital logic using NGSpice** (*Course: VLSI Design, Oct '15*)
  - Designed a minimum sized inverter having **rise and fall times**.
  - Evaluated **logical effort** of multiple input NAND and NOR gates using delay vs fanout plots.
- **Design of various Digital circuits using HDL** (*Jan-May '17 & Apr '16*)
  - Implemented **GCD calc** using **Sequential Divider** to compute GCD of two 8 bit unsigned numbers.
  - Implemented **Sequential Multiplier** using **control** and **data** path for two 8 bit inputs in **VHDL**.
  - Implemented **Alexander & Hogge Phase detector** in **Verilog** and simulated in **ModelSim**.
  - **Algorithmic State Machine Design** and simulation-testing of a **Vending Machine FSM**.
- **Laptop Audio Amplifier** (*Course: Electronic Hardware Workshop, Jul-Nov '12*)
  - Designed a **6 Watt Dual Channel** Laptop Audio Amplifier using **LA4440** IC .
  - Assembled the circuit on **PCB** and facilitated **low distortion** over wide frequency range.
- **Simple Electronic Code Lock** (*Course: Electronic Hardware Workshop, Jul-Nov '12*)
  - Implemented an Electronic Code Lock using a **Decade Counter IC CD4017**.
  - Assembled the circuit on **PCB** with **High Noise Immunity** and **Low Power Consumption**.

RELEVANT COURSES

- Image Processing
- System Design
- VLSI Design
- Communication Networks
- Wavelets
- Electronic System Design
- VLSI Design Lab
- Sensors in Instrumentation
- DSP and its Applications
- Embedded System Design
- CMOS Analog VLSI Design
- Research and Development

ONLINE CERTIFICATION COURSES

- **Stanford Online - Coursera** *(Jul '17)*
  - Completed **Stanford Online Certification** course on **Machine Learning** authorized by **Stanford University**, approved by associate **Prof. Andrew Ng** and offered through **Coursera**.
- **Udemy Online Certification Courses**
  - **Deep Learning** A-Z™: Hands-On **Artificial Neural Networks** online course. *(Aug '17)*
  - **Machine Learning** A-Z™: Hands-On **Python & R in Data Science** online course. *(Aug '17)*
  - **Data Structures and Algorithms in C** online course. *(Aug '17)*
- **SoloLearn Online Certification Courses** *(2016-17)*
  - C++
  - C#
  - Java
  - Python
  - HTML
  - CSS
  - JavaScript
  - JQuery
  - SQL
  - PHP
  - Ruby
  - Swift

TECHNICAL SKILLS

Languages : C, C++, C#, Java, Python, R, MATLAB, HTML, CSS, JavaScript, JQuery, SQL, PHP, Ruby, Swift, Shell Scripting, VHDL, Verilog, Ngspice.

Tools : Android Studio, RStudio, Code Composer Studio, Eclipse, Anaconda:Spyder, MATLAB, Octave, Git, Scilab, Pspice, Mentor Graphics, Altera Quartus, Visual Studio, OpenCV, 8085 Simulator, ARMSim, Keil uVision, MPLAB IDE, Arduino, Proteus, Wireshark, 4nec2, CorelDraw, Photoshop, Pagemaker.

POSITIONS OF RESPONSIBILITY

- **Research Assistantship: TIDSP lab, IIT Bombay** (July '15 - present)
  - Participated in the development of course material for the **UG and PG DSP lab** courses (**strengths 75 and 35**) including preparation of lab manuals(*using version control Git*), quizzes, mentoring in projects and evaluation.
  - Helped students understand some important concepts in signal processing through their implementation on TMS320C5515, a Fixed Point Digital Signal Processor from Texas Instruments.
  - Maintained the lab website developed with the help of **markdown** on a local server.

EXTRA CURRICULAR ACTIVITIES & VOLUNTEER WORK

- Involved in the development of **Advanced Signal Processing Algorithms** in the field of **Biometrics** for **National Center of Excellence in Technology for Internal Security (NCETIS)**. *(Jul '16)*
- Participated at the **IConSIP Conference** organized by SGGSIET, Nanded where the team won the **Best Paper Award** and **Travel Bursary Award**. *(Oct '16)*
- Participated in **"3 day workshop on the theme: TEQIP-III Preparation and Collaborative Faculty-Student Pedagogical Initiatives"** workshop organized by **MHRD-TEQIP-KITE**. *(Mar '17)*
- Participated in **"Recent trends in Biomedical Signal Processing"** workshop organized by **MHRD-TEQIP-KITE** conducted in **CDEEP** and **Dept. of EE, IIT Bombay**. *(Jan '17)*
- Participated in **"Digital Signal Processing System Design"** workshop organized by **MHRD-TEQIP-KITE** conducted in **CDEEP** and **Dept. of EE, IIT Bombay**. *(Nov '16)*
- Secured **Consolation prize** in **Working Model Exhibition / Competition**, in **Prakalpa'14** organized by **ISTE Student's Chapter(MH-60)**. *(Mar '14)*
- Participated in **Level 1 & Level 2 Robotics Workshop and Acquabotics Workshop** organized by Electronic Engineers Students Association**(EESA)**. *(2010-11)*
- **Awarded Certificate of Merit** for performance in **Diploma in PC Hardware and Networking** from Network Training Maintenance and Solution**(NTMS)**. *(2008)*
- **Awarded Certificate of Merit** for performance in **Office Automation and Web Designing** from **Compunet**. *(2006)*
- Participated in **Regional Final of Aqua Regia** - the **National level Inter-School Quiz conducted by T.I.M.E.** with a participation of 67,024 students across 11 cities of India. *(Nov '06)*
- Meritorious performance in **MTS Examination** conducted at State Level. *(Apr '07)*
- Volunteered for **The National Association For Disabled Enterprises.** *(2002-04)*
- **Hobbies**: Playing Lawn Tennis, Cricket, Listening Music.