

Curriculum Vitae

Srivatsan Sridhar

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EDUCATION

Stanford University

2019 - ongoing

Master of Science (MS) and Doctor of Philosophy (PhD) in Electrical Engineering

Indian Institute of Technology Bombay, Mumbai

2015 - 2019

Bachelor of Technology (B.Tech) with Honours in Electrical Engineering

Minor degree in Computer Science and Engineering

Cumulative Performance Index (CPI) : 9.85/10.0

ACADEMIC AWARDS AND HONOURS

- Received the **Edward W. Barnholdt graduate fellowship** for doctoral studies ['19]
- Awarded the **President of India gold medal** for the highest rank among undergraduates ['19]
- Received **INSPIRE scholarship** for science for placing in top 1% of Maharashtra State Board ['15]
- Secured **all India rank 50** (1.3 M candidates) in JEE Main, **all India rank 137** (150 K candidates) in JEE Advanced (Joint Entrance Examination for engineering) ['15]
- Ranked in **top 1%** in **National Standard Examination in Physics** (NSEP) ['14-'15]
- Received the **KVPY fellowship** by Indian Institute of Science (IISc) with **All India Rank of 57** ['13]
- Awarded **silver medal** in Dr.Homi Bhabha Young Scientist Competition ['11-'12]

RESEARCH EXPERIENCE

- Lower Bounds and Estimators for Least Squares using Random Projections** [Jan - May'20]
Mentors: Prof. Mert Pilanci, Prof. Ayfer Özgür (Stanford University)
 - Proved new **tight lower bounds** for least squares optimization using Gaussian projections
 - Proposed a **shrinkage estimator** that nearly achieves the lower bound
- Compression for Genomic Data** [Sep - Dec'19]
Mentor: Prof. Tsachy Weissman (Stanford University)
 - Analyzed **lossless and lossy compression** methods for nanopore genome sequencing data
 - Showed a **40-50% reduction in size** with negligible impact on basecalling accuracy
- Secure Multiparty Computation** [Jul'18 - Aug'19]
Mentors: Prof. Sibiraj Pillai, Prof. Manoj M. Prabhakaran (Indian Institute of Technology Bombay), Prof. Vinod M. Prabhakaran (Tata Institute of Fundamental Research, Mumbai)
 - Studied **communication and randomness lower bounds** for secure computation
 - Proved the optimality of a standard protocol** for secure computation of 2-bit AND
- RF Fingerprinting Authentication for Bluetooth Receivers** [May - Jul'18]
Mentor: Prof. Anantha P. Chandrakasan (Massachusetts Institute of Technology)
 - Used **RF Fingerprinting** to classify and authenticate bluetooth transmitters using their raw signal
 - Designed feature extraction and a quantized neural network to achieve **>90% classification accuracy**
- Onset Detection Methods for Piano Music** [May'17 - Feb'18]
Mentor: Prof. Preeti Rao (Indian Institute of Technology)
 - Presented a **novel feature extraction method** for piano note onset detection
 - Achieved **95% successful note onset detection** for monophonic piano music

PUBLICATIONS

- Sibi Raj B Pillai, Manoj M Prabhakaran, Vinod M Prabhakaran and **Srivatsan Sridhar** [Dec '19]
"[Optimality of a Protocol by Feige-Kilian-Naor for Three-Party Secure Computation](#)"
20th International Conference on Cryptology in India (INDOCRYPT), Hyderabad, India.
- K. Subramani, **S. Sridhar** (equal contribution), Rohit M. A., and P. Rao [Feb '18]
"[Energy-Weighted Multi-Band Novelty Functions for Onset Detection in Piano Music](#)"
Proc. of National Communications Conference, Hyderabad, India.

OTHER PROJECTS

1. **AdvAE and FlowAE : Sampling Arbitrary Latent Variable Distributions in an Autoencoder** [Oct - Dec'19]
Course Project : Deep Generative Models (Stanford University)
 - Proposed a generative model combining autoencoders with flow networks and adversarial learning
 - Demonstrated improved sample quality and smaller Frechet distance scores
2. **Digitally Programmable Analog Computer** [Jan - Apr'18]
Course Project : Electronic Design Lab (Indian Institute of Technology Bombay)
 - Designed an analog computer to **solve linear dynamical systems** for real-time simulations
 - Equipped it with on-chip power management, and microcontroller for programmability

SKILLS

- **Languages** : English (professional proficiency), Hindi, Tamil (native)
- **Programming** : Python, C++, Java, Tensorflow, VHDL, 8085 assembly language
- **Software** : MATLAB, Scilab, GNURadio, Eagle, Quartus
- **Hardware** : Arduino, ATmega, 8085 microprocessor, analog circuits

TEACHING EXPERIENCE

1. **Teaching Assistant for: Quantum Physics** - Prof. S. Umasankar [Jul - Nov'16]
Linear Algebra - Prof. A. Ranjan [Jan - Feb'17]
 - Selected for a TA team of 20. Each TA to teach a class of 45 first year undergraduates
 - Conducted weekly tutorials to clear concepts and discuss solutions to problems
2. Conducted tutorial classes on Linear Algebra, Group Theory, and Cryptography ['18 - '19]

ADVANCED COURSES UNDERTAKEN

At IIT Bombay:

- **Basic EE courses:** Electronic Devices (with lab), Analog and Digital Circuits (with lab), Microprocessors (with lab), Electronic Design Lab, Control Systems (with lab), Probability and Random Processes, Signals and Systems, Communication Systems (with lab), Digital Signal Processing
- **Graduate level EE courses at IIT Bombay:** Image Processing, Speech Processing, Computer Vision, Number Theory and Cryptography, Information Theory and Coding, Network Information Theory
- **CS courses at IIT Bombay:** Computer Networks, Data Structures and Algorithms, Operating Systems, Machine Learning, Network Security and Cryptography, Advanced Computer Architecture

At Stanford: Deep Generative Models, Convex Optimization I and II, Scaling Blockchains

LEADERSHIP EXPERIENCE

1. **Classical and Folk Arts Secretary** - Institute Cultural Council, IIT Bombay ['17 - '18]
 - **Led a team of 4** conveners for the promotion of Indian classical and folk arts
 - Managed a **budget of 0.5 million INR** for purchase of inventory, inviting professional artists and conducting concerts, student showcases, and workshops
 - Initiated regular classes traditional and rare Indian art forms
2. **Coordinator** - Mood Indigo - Asia's largest college cultural festival ['16]
 - Worked with a team of 50 volunteers to organize concerts with a footfall of 20,000
 - Ideated and executed Asia's largest band competition Livewire
3. **School Head Boy** - Hiranandani Foundation School, Thane ['12 - '13]
 - Coordinated a student council of 29 members to organise intra-school activities
4. **President of Interact Club** - Youth Wing of Rotary Club of Hiranandani Estate, Thane ['11-'12]
 - Led a team of 20 students to organize social welfare activities for the underprivileged sections
 - Organized fundraiser for education of poor children, visit to an old age home, tree plantation drive

EXTRA CURRICULAR ACTIVITIES

1. **Music**
 - **16 years of experience** in Carnatic (south Indian) classical vocal and violin [’04 - Present]
 - Awarded merit in Grade 1 Plectrum Guitar by **Trinity College of London** [Jan’12]
 - Performed at Naadha Vaibhavam, a **Guinness World Record event** of 5700 Carnatic singers on one stage, organised by the Art of Living [Jan’11]
2. **Social Service – National Service Scheme** [’15 - ’16]
 - Volunteered for the **Educational Outreach** Programme
 - Completed **80 hours** of teaching underprivileged students at NGOs in Powai, Mumbai
3. **Yoga**
 - Received formal training in Yoga from the Art of Living Foundation
 - Awarded gold certificate for performing 108 Suryanamaskars on World Health Day [Apr’12]
4. **Runner Up** at the Thane city finale of **HDFC Life Spell bee 2012** [’12]