Vin Bhaskara

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EDUCATION

M.Sc. in **Applied Computing**, Department of Computer Science, 4.0/4.0 (**A+**) Sep 2018 – Dec 2019
University of Toronto, Downtown Toronto, Canada

- Received the **Vector Institute Scholarship in Artificial Intelligence (VSAI)** valued at $17,500 awarded to **66 scholars in Ontario**
- Courses: Deep Learning for Healthcare, Computer Vision, Reinforcement Learning, Geometry Processing

B.Tech. in **Engineering Physics** with Minor in **Electronics Engineering**, Department **Rank 1** Jul 2012 – Jun 2016
Indian Institute of Technology (IIT), Guwahati, India

- **Institute Silver Medalist** for the best academic performance in the department among the graduating class of 2016 at IIT Guwahati

WORK EXPERIENCE

Research Engineer 2, Foundation Models and LLMs **Borealis AI (RBC Research Institute), Montréal**
Deep Learning for Finance and Credit Modeling Aug 2022 – **Present**

- **Foundation Models** and **LLMs** trained on proprietary data of RBC (Canada's largest bank) for applications in finance and banking

Research Engineer, Computer Vision **Samsung AI Centre, Toronto**
Deep Learning for Image Enhancement and Synthesis Feb 2020 – Jun 2022

- Multi-frame alignment for **Burst Photography** and **Self-Supervised Learning** for **blind image denoising**

Software Engineer 2, Big Data and Machine Learning **Symantec Corporation, India**
Machine Learning for Malware Detection Jul 2016 – Jul 2018

- Research and development of **Malware Classifiers** trained on Symantec's **Big Data telemetry** of file attributes
- Deployed an **XGBoost** model with the detection name *Trojan.Gen.9* on **Norton Anti-Virus** reducing **over 60%** of previous misses

PEER-REVIEWED PUBLICATIONS

Citations: 220, h-index: 7 *on Google Scholar as of Jan 2024*

1. **V.S. Bhaskara***, S.N. Swain*, P.K. Panigrahi. "Generalized Entanglement Measure for Continuous-Variable Systems," *Physical Review A (PRA) 105, 052441 (2022)*, American Physical Society May 2022
2. **V.S. Bhaskara***, T.A. Armstrong*, A. Jepson, A. Levinshtein. "GraN-GAN: Piecewise Gradient Normalization for Generative Adversarial Networks," *WACV 2022 Conference (2022 IEEE Winter Conference on Applications in Computer Vision)* Jan 2022
3. **V.S. Bhaskara***, H. Wang*, A. Levinshtein*, S. Tsogkas, A. Jepson. "Efficient Super-Resolution Using MobileNetV3," *ECCV 2020 Workshop (2020 European Conference on Computer Vision Workshop)* Jan 2021
4. **V.S. Bhaskara**, P.K. Panigrahi. "Generalized concurrence measure for faithful quantification of multiparticle pure state entanglement using Lagrange's identity and wedge product," *Quantum Inf. Process. 16 (5), 118*, Springer Mar 2017
5. J. Flannery, G. Bappi, **V.S. Bhaskara**, O. Alshehri, M. Bajcsy. "Implementing Bragg mirrors in a hollow-core photonic crystal fiber," *Optical Materials Express 7 (4), 1198*, Optical Society of America Journal Mar 2017
6. C.M. Haapamaki, J. Flannery, G. Bappi, R. Al-Maruf, **V.S. Bhaskara**, O. Alshehri, T. Yoon, M. Bajcsy. "Mesoscale cavities in hollow-core waveguides for quantum optics with atomic ensembles," *Nanophotonics 5 (1)*, De Gruyter Journal Sep 2016

(* *Denotes equal contribution*)

PATENTS

- H. Wang, X. Sun, **V.S. Bhaskara**, S. Tsogkas, A. Jepson, A. Levinshtein. "Unsupervised Super-Resolution Training Data Construction," *US Patent App. 17/512,312* Oct 2021

RESEARCH INTERNSHIPS

Research Intern, Computer Vision **Samsung AI Centre, Toronto**
Supervised by Dr. Alex Levinshtein and Prof. Allan Jepson (University of Toronto) May 2019 – Dec 2019

- Improving **object detection in cluttered scenes** using part-based auxiliary targets with single-stage methods for on-device inference

Research Visitor, Machine Learning for Health — **St. Michael's Hospital, Toronto**
Supervised by Prof. Marzyeh Ghassemi (University of Toronto) — Feb 2019 – Apr 2019

- Utilizing patient data from the General Internal Medicine ward to **assess a patient's risk of ICU transfer** or death early
- Proposed a **data-driven regularization layer** that improved generalization and interpretability of predictions by incorporating **ICD-10 diagnosis codes** into the model (without requiring them during inference)

Undergrad Research Assistant, Nano-Photonics — **Institute for Quantum Computing (IQC), Waterloo**
Supervised by Prof. Michal Bajcsy (University of Waterloo) — May 2015 – Jul 2015

- Evaluating novel hollow-core **photonic-crystal fibre** designs by simulating EM wave propagation for on-chip photonic transistors

MISC PROJECTS

Cervical Cancer Screening with Mobile Camera Images — **Kaggle Competition**
Identifying a woman's cervix sub-type from phone camera images for faster cervical cancer diagnosis — Mar 2017 – Jun 2017

- Proposed deep conv nets to incorporate **specific priors** of the dataset such as the **radial symmetry** of **cervix images**
- Awarded a **Silver Medal** by Kaggle for securing **26th place** (out of ~1000 participants)

Identifying Duplicate Question Pairs on Quora — **Kaggle Competition**
Detecting question pairs that have the same semantics or intent — Mar 2017 – Jun 2017

- Modeled **Siamese LSTMs** over question pairs to model **sentence embeddings** over GloVe word embeddings
- Awarded a **Bronze Medal** by Kaggle for being placed in the top 6% (**193rd** of **3307 competitors**)

ARXIV PRE-PRINTS

- **V.S. Bhaskara**, S. Desai. "Exploiting uncertainty of loss landscape for stochastic optimization." *arXiv:cs.LG/1905.13200* — May 2019
- **V.S. Bhaskara**, D. Bhattacharyya. "Emulating malware authors for proactive protection using GANs over a distributed image visualization of dynamic file behavior." *arXiv:stat.ML/1807.07525* — Jul 2018

ACHIEVEMENTS

- "Samsung Research America Rockstar" peer-to-peer recognition Award — Apr 2021
- Selected for **AI Residency Program** at **Google X**, Mountain View (Did not accept the offer) — Apr 2019
- **Symantec WOW** (Winning Our Way) Level 1 & Level 3 company-wide recognition awards for "exceptional performance through focused collaboration with teams" — 2018
- **Kaggle 'Competitions Expert'** ranking for being placed **835 out of 69,593** competing data scientists — 2017
- Shortlisted **among 25 students** selected **internationally** for USEQIP 2015 Summer School at the **Institute for Quantum Computing** and the **Perimeter Institute for Theoretical Physics** in Waterloo, Canada — 2015
- National Initiative on Undergraduate Science (NIUS) **scholarship** awarded by the **Tata Institute of Fundamental Research** (TIFR) for pursuing research at leading physics labs in India for the year — 2013

TECHNICAL SKILLS

- **Scripting/Languages**: Python, C++, Java, C, Unix Shell
- **Databases**: SQL (RDBMS), NoSQL, Big Data management on **Hadoop eco-system** (Hive, Oozie, HDFS, MapReduce)
- **Packages**: PyTorch, XGBoost, Pandas, Eigen, libigl

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