Srinivasan Sivanandan

http://www.cs.toronto.edu/~srinivasan | srinivasan@cs.toronto.edu | (+1) 647-879-1235

ACADEMIC QUALIFICATIONS

2019	MSc in Applied Computing (**Courses**: Deep Reinforcement Learning, Machine Learning for Health, Natural Language Computing, Computer Graphics, Blockchain, Human-Computer Interaction)	University of Toronto	**4.0**/4.0
2016	Dual Degree (B. Tech. (Honors) + M. Tech.), Biotechnology & Biochemical Engineering (Micro-specialization in Biomedical Devices & Instrumentation)	Indian Institute of Technology (IIT), Kharagpur	**9.29**/10 (**Rank 1**) **Institute Silver Medal**

WORK EXPERIENCE

Lead Engineer – Medical Imaging Team, Samsung Research India, Bangalore   *(Jun 2016 – Aug 2018)*

- Developed Deep Learning algorithms for detection and volumetric segmentation of ovarian follicles in 3D Ultrasound images.
- Developed image processing algorithms for 3D Ultrasound and Pulsed Wave Doppler applications focusing on Obstetrics and Gynaecology.
- Key contributor - **5DFollicle™**, **R-MPI** - Fetal Doppler measurement and **Labour and Delivery** applications in Samsung Ultrasound devices.

RESEARCH PUBLICATIONS

- Suresh R, **Sivanandan S**, Singhal N, Lee JY, Lee MY, Won HS, "Automated Measurement of Fetal Right-Myocardial Performance Index from Pulsed Wave Doppler Signals", **SPIE Medical Imaging - Computer-Aided Diagnosis** 2019. (Accepted for Oral Presentation)
- Narayan NS, **Sivanandan S**, Kudavelly S, Patwardhan KA, Ramaraju GA. Automated detection and segmentation of follicles in 3D ultrasound for assisted reproduction. **SPIE Medical Imaging - Computer-Aided Diagnosis** 2018 Feb 27.
- Salcedo A, Tarabichi M, Espiritu SM, Deshwar AG, David M, Wilson NM, Dentro S, Wintersinger JA, Liu LY, Ko M, **Sivanandan S,** …**,** Boutros PC. Creating Standards for Evaluating Tumour Subclonal Reconstruction. **bioRxiv**. 2018.
- **Sivanandan S** and Naganathan AN. A disorder-induced domino-like destabilization mechanism governs the folding and functional dynamics of the repeat protein IκBα. **PLoS Computational Biology**, 9(12): e1003403, 12 2013.

PATENT APPLICATION

Narayan NS, **Sivanandan S**, Patwardhan KA, Kudavelly S. "Method and apparatus for follicular quantification in 3D ultrasound images"

ACADEMIC PROJECTS & INTERNSHIPS

Masters' Thesis – Computational Structural Biology Lab, IIT Kharagpur   *(Jul 2015 – May 2016)*

- Developed a meta-classifier for the mapping of RNA binding regions (RBR) in proteins using global and local protein sequence features.
- Analyzed the binding patterns of similar protein sequences binding with multiple dissimilar RNA sequences.

Research Intern - Ontario Institute for Cancer Research, Toronto, Canada   *(May 2015 – Jul 2015)*

- Worked under the supervision of Dr. Paul Boutros on the development of a streamlined and configurable pipeline for the simulation of heterogeneous tumors and benchmarking of Single Nucleotide Variant (SNV) callers for the **DREAM SMC Tumor Heterogeneity Challenge**.

PERSONAL & COURSE PROJECTS

Dyna-AIL: Adversarial Imitation Learning by Planning (Course Project: Deep Reinforcement Learning)   *(2018)*

- Developed an end-to-end differentiable adversarial imitation learning algorithm in a Dyna-like framework for switching between model-based planning and model-free learning. Preliminary results showed convergence to an optimal policy with fewer number of environment interactions.

AutoMosaic (University Software Development Contest) (https://github.com/srinivasans/AutoMosaic)   *(2014)*

- Developed a novel image processing algorithm for automated mosaicking of torn paper documents using dynamic programming.

Co-Founder and Lead Developer, ReadersNode (~**1400** registered users, ~**1500** books shared) (Personal Project)   *(2015)*

- Co-founded ReadersNode, an online platform for selling, buying and renting books on campus and in local communities.
- Full-stack (LAMP) development, SEO and usage analytics for user experience of ReadersNode (http://readersnode.com).

NOTABLE AWARDS & ACHIEVEMENTS

- Recipient of **Samsung Citizen Award** – for successful development and integration of follicle quantification algorithm (5DFollicle)   *(2017)*
- Awarded **Proficiency Prize for the Best Project Work** among the graduating class of 2016 – IIT Kharagpur   *(2016)*
- Awarded **MITACS Globalink Research Fellowship** – Toronto, Canada   *(2015)*
- Awarded **University of Alberta Research Experience (UARE)** fellowship for a 10-week research internship in Canada   *(2014)*

TECHNICAL SKILLS

- **Programming and Databases:** C, C++, Python, C#, SQL, Java, JavaScript, Object Oriented PHP
- **Frameworks and Libraries:** Caffe, TensorFlow, Keras, ITK, VTK, NumPy, scikit-learn, Django, WPF
- **Certification:** Six Sigma Green Belt by KPMG