E M V Naga Karthik

Graduate Student at École de Technologie Supérieure
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naga-karthik.github.io

Research Objective

With my knowledge of deep learning techniques and medical image processing, I aim to adapt generative modelling algorithms to augment medical images by synthesizing them across different imaging modalities. I aspire to gain hands-on experience in this field by engaging with academic groups across elite universities and research institutions.
I also aim to develop soft skills by collaborating with supervisors and peers.

Education

- **École de Technologie Supérieure** — Montréal, Canada
  M.A.Sc in Electrical Engineering — *2019 - Present*
  - Master's Thesis: Simulation of Freehand 3D Ultrasound Images from an MRI Atlas
  - Supervisor and Co-Supervisor: Prof. Catherine Laporte and Prof. Farida Cheriet
  - Current GPA: 4.3/4.3

- **Shiv Nadar University** — Greater Noida, India
  B.Tech in Electronics and Communication Engineering — *2015 - 2019*
  Minor in Mathematics
  - Undergraduate Thesis: Extraction and Visualization of the Features of Fingerprints using Conventional Methods and Convolutional Neural Networks
  - Supervisor: Prof. Madan Gopal
  - Graduated with Cumulative GPA of 9.19/10.0
  - Member of university's table tennis team and represented the university in various intra- and inter-university competitions each year

- **Kendriya Vidyalaya** — Mumbai, India
  Higher Secondary Education — *2013 - 2015*
  - Graduated with a 90.2%

- **Kendriya Vidyalaya** — Mumbai, India
  Senior Secondary Education — *2005 - 2013*
  - Graduated with a Cumulative GPA of 10.0/10.0

Publications (also available here)

Peer-Reviewed Journal Articles

- Naga Karthik, E., Karimi, E., Lulich, S.M., Laporte, C. Automatic Tongue Surface Extraction from Three-Dimensional Vocal Tract Images. *The Journal of Acoustical Society of America*, 147(3), 2020.

Conference Proceedings

- Naga Karthik, E., Laporte, C., Cheriet, F. Three-dimensional Segmentation of the Scoliotic Spine using Unsupervised Volume-based MR-CT Synthesis. In *Proceedings of SPIE Medical Imaging*, 2021. (Submitted)

Academic Awards & Honours

Master's Tuition Fee Exemption for Summer Semester 2020
ÉTS Internal Scholarship 2020
Master's Tuition Fee Exemption for Winter Semester 2020
Dean's List Award for Monsoon semester 2018
Travel and Subsistence Allowance for a Research Internship at ÉTS 2018
Dean's List Award for Spring semester 2018
Dean's List Award for Monsoon semester 2017

Graduate Courses Taken

- **Probabilistic Graphical Models (IFT 6269)** Université de Montréal
  Fall 2020
- **Learning Representations (IFT 6135)** Université de Montréal
  Winter 2020
- **Fundamentals of Computer Graphics (COMP 557)** McGill University
  Fall 2019

Research Experience

- **Undergraduate Research Intern** Indian Institute of Technology, Bombay
  Tomographic Reconstruction *May 2017 – July 2017*
  - Worked under the supervision of Prof. Ajit Rajwade, Department of Computer Science and Engineering.
  - Adapted the concepts of filtered back projection (FBP), dictionary learning and conjugate gradient methods to medical images.
  - Applied Radon transform, discrete Cosine transform (DCT) and dictionary learning concepts, namely, Orthogonal Matching Pursuit (OMP) and K-means Singular Value Decomposition (K-SVD) to reconstruct walnut slices and human colon images.
  - Modified the existing MATLAB codes to compare and analyze the results from each method.

Teaching Experience

- **Introduction to Robotics** Shiv Nadar University
  Undergraduate Teaching Assistant *Aug. 2018 - Dec. 2018*
  - Conducted experiments with basic robot movement such as the line follower, obstacle avoider and Proportional Integral and Derivative (PID) control.
  - Engaged with during the class hours during the lab in their experiments.
  - Assisted the course instructor in evaluating the final projects and grading the performance of students.

Technical Skills

- Programming and Markup Languages
  - Python, LaTeX, PyOpenGL
- Deep Learning Libraries
  - PyTorch, Keras
- Specialized Software
  - MATLAB, Slicer3D

Other Skills

- Sports/Athletics
  - **Winner** of the Shiv Nadar University Sports League (SNUSL) Table Tennis Championship, a league-format, intra-university tournament held every academic year between 6 different teams. February 2019
  - **Winner** of the Shiv Nadar University Sports League (SNUSL) Table Tennis Championship. January 2018
  - **Winner** of the **best player** award in Shiv Nadar University Sports League (SNUSL) Table Tennis Championship for the academic year 2017-18. January 2018
  - **Winner** of the Banyan League Table Tennis Championship, an annual league-style tournament held between four universities: Shiv Nadar University, Ashoka University, O.P. Jindal Global University and BML Munjal University. September 2017
- Languages
  - **Expert:** English
  - **Intermediate:** Hindi, Telugu
  - **Novice:** French