Vishwanath Venkataraman

Purpose Statement

Post my graduation in mechanical engineering, my masters at IIT madras in computational geometry involved developing algorithms to compute a family of boundaries/envelopes for a set of planar curves. Post my studies, I landed at GE-Aviation and was a part of a team that developed engineering tools for creating and meshing of airfoil blades in the turbine/compressor components of jet engines. After a couple of years, I wanted a career transition towards the field of cognitive science and behavior modeling for which I took a break to equip myself with data analysis fundamentals and ML techniques. I was again employed in a start-up founded by an IIT professor. My responsibilities at YNOS venture engine Pvt. Ltd. include delivering a web application which uses ML algorithms on data from VC industry. Currently, I am looking for avenues where I get to focus exclusively on machine learning algorithm development and data analysis whilst leveraging on existing skill set.

Education

2009–2012 **Masters of Science**, *Indian Institute of Technology, Madras*, India, *GPA – 8.0*.
Specialized in computational geometry and geometric modelling

2005–2009 **Bachelor of Engineering** , *Anna University, Chennai*, India, *GPA – 8.0*.
Specialized in Mechanical Engineering

Experience

Jan '17–current **Product Developer**, YNOS VENTURE ENGINE CC PVT. LTD. , Chennai, India.
Web application developer using ML based Data analytic engine.

Details:

- Data Analysis/ Machine Learning:
  - Implemented ML ranking algorithms using Scikit-Learn
  - Data treatment to generate the training model which involved a good understanding of the financial/investment sector using packages like Pandas
- Database Architecture
  - Implemented a base-line full stack using 'LAMP' architecture and python-Flask
  - Database Management through MYSQL database and Python - sqlAlchemy
- Project Planning
  - Plan out the entire product development life cycle keeping in mind the business and marketing strategies

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2012–Jul' 16 **Engineering tools developer**, GE-Aviation, Bangalore, India.

Maths and physics based software tools developer for CFD simulation of Jet-engine components. Worked in the areas of Geometric modeling, Gridding, mesh-morphing, 3D rendering,image processing and rubbed shoulders with CFD solver tools.

Details:

- Computational Geometry and CAD:
  - Developed tools in C++ API to design complex geometries like turbine - airfoil using parametric/ spline based input
  - Worked closely with the design team to reduce overall cycle time of turbo-machinery design process by speeding up the algorithmic complexity of existing legacy
  - Worked on modelling tools like NX(unigraphics) to create proof of concept study for advanced features in compressor/turbine design
- Gridding and CFD
  - Developed tools to automatically grid the CFD domain as a pre-processing step to solver analysis of airfoil and other associated components
  - Worked on grid-morphing utilities to enable speedy reproduction of grids according to geometry changes
- Database handling
  - Worked on speeding up the data querying to and from a global database of the entire engine line by re-structuring the node elements in the data-structure

Projects

- Masters Thesis
  Title: Algorithm for bounding hulls of a set of planar closed curves
  Description: This thesis explored the idea of generating a family of bounding enclosures for a set of planar curves using alpha-hull, delaunay and voronoi computations.
- Machine Learning
  - Digit Classifier: Created a Convoluted Neural network (Deep model) for MNIST data to do digit recognition and classification.(part of google-udacity deep learning course)
- Micro-controller programming
  - Developed a voice based smart assistant using Raspberry PI and Amazon Alexa

Training attended

Dec, 2012 LEAN six sigma training: Conducted by GE, Aviation where the DMAIC (Design, measure, analyze, improve, control) principles were elaborated

Jun, 2013 Jet Engine Tear Down School: A study Jet Engine was dismantled to the component level and then re-assembled

Aug, 2013 NX training: Conducted by Seimens PLM software, India in sketching, part and assembly constraints

May, 2015 Fundamentals of Leadership: Dedicated training on improving leadership abilities as a precursor to take roles of increasing responsibilities

Key skills

Programming Languages: C/ C++ , fortran, python(Tensorflow, ipython-notebook,Pandas,sqlalchemy)

Professional Tools	Autodesk Inventor, Unigraphics
Full stack development	Linux, Apache web server, MYSQL-server, PHP, PHPMyadmin, MYSQL-workbench,python-Flask
Database formats	CGNS, HDF, In-house,SQL
Others	NXOPEN and Ufunc API

Positions of responsibility

- Core member of the communications team in GE, Bangalore and organized many simplification and branding initiatives
- Teaching assistant at CAD lab,Department of Engineering Design IIT Madras, India for under-graduate courses on geometric modeling and programming
- Volunteer at Payir (NGO), in-charge of conducting health awareness campaigns, IT support for the government schools in the near-by villages

Publications

- Vishwanath A. V., Arun Srivatsan R. and Ramanathan M, Minimum area enclosure and alpha hull of a set of freeform planar closed curves, Computer-Aided Design, 45(3), March 2013, pp 751-763
- Vishwanath A. V. and Ramanathan M, Determining curves in the convex hull from a set of planar closed convex curves, Computer-aided design and Applications , Volume 11, Number 1, pp99-106, 2014, Published online: 24 Sep 2013
- Vishwanath A. V. and Ramanathan M, Concave hull of a set of freeform closed surfaces in R3, Computer-Aided Design and Applications, Volume 9, Number 6, pp. 857-868, 2012
- Vishwanath A. Venkataraman and Ramanathan Muthuganapathy, "Algorithm for computing positive alpha-hull for a set of planar closed curve, To appear in Computers and Graphics