

# Praveen Kumar Pandian Shanmuganathan, MS

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## SUMMARY

Computer Vision and Deep Machine Learning Scientist with 5+ years of experience leading the design, development, and deployment of innovative machine learning algorithms. Hands-on Leader focused on leveraging the latest technologies and frameworks to build innovative new products and solutions that generate accurate and actionable business results at scale.

## SKILLS

- **Data Science & Engineering:** Roadmap Development, Product Design & Development, Computer Vision, Machine Learning, Deep Learning, Neural Networks, Architecture Design & Coding, Quantitative Analysis, 3D Algorithm Design & Geometry, Research & Development, Prototyping, Application Development, UI/UX, Data Extraction, Business Intelligence & Analytics
- **Technology:** Python, C++, C#, Javascript, Angular, Node.js, React, Kubernetes, AWS, GCP, Kubeflow, Seldon, Argo Workflow, Airflow, Postgres, Amazon RDS, MongoDB, DynamoDB, SQL Server, MSSQL

## EDUCATION & CERTIFICATIONS

- **Ph.D. in CS with a Concentration in Computer Vision & Machine Learning, Florida Institute of Technology Expected 2023**
- **MS in CyberSecurity with a Conc. in Computer Vision, Deep Learning, & Neural Networks, Florida Institute of Technology**
  - **Master's Thesis:** Cross Spectral Biometric Performance Analysis on High-Resolution Facial Images
  - Evaluated the biometric authentication performance of facial images at different spectrums using Periocular recognition and found Near Infrared spectrum outperforms the visible spectrum for biometric authentication.
- **Bachelor of Engineering in Electronics and Instrumentation, Anna University**
- **Certification in Machine Learning and Artificial Intelligence, Massachusetts Institute of Technology**

## RELEVANT EXPERIENCE

### **Senior Research Engineer, Philips Electronics**

**2017 - Present**

- Led the design and development of MaskSelector and VestSelector, global product design solutions consisting of 2D/3D Scanning and Feature Extraction algorithms and CNNs that extract facial geometry to determine CPAP mask and vest sizing.
- Lead a team of 8 engineers analyzing 3D facial data extracted using deep learning, statistics, and analytical techniques.
- Achieved a facial reconstruction accuracy of sub "mm" on the entire face by creating Body and Face reconstruction solutions using 2D/3D scanning and developing synthetic 2D/3D datasets from Ground truth 3D data for poses, lighting, & occlusions.

### **Research Assistant, Florida Institute of Technology**

**2015 - 2016**

- Researched and developed Periocular Recognition, a new biometric classification modality for DARPA research projects using Computer Vision in Biometrics, Deep Neural Networks, and Tensorflow, PyTorch, and Keras frameworks.
- Improved classification performance from 89.7% to 99.1% and increased the template matching speed from 70,000 comparisons/sec to 100,000 comparisons/sec using NN architecture.
- Evaluated performance improvements against facial datasets consisting of 100K+ images in collaboration with biometric organizations including CyberExtruder, DARPA, and Harris Institute of Assured Information.
- Developed an algorithm for predicting and annotating house numbers automatically by analyzing public spatial data and created a license plate recognition classifier for identifying car number plates to monitor campus activity using Tensorflow.

### **Senior Project Engineer, Wipro Technologies**

**2012 - 2014**

- Collaborated with clients to develop information technology and business process service solutions for 6000+ users using Microsoft Exchange Servers, Active Directory, Office 365, SharePoint, IIS, and networking.
- Recognized with Feather in my Cap Awards in 2013 and 2014 for developing automated scripts that reduced the SLA from 4 hours to 1.5 hours by automatically resolving repetitive issues
- Reduced the project queue and overload by implementing lean principles and creating new documentation to track issues.

## PATENTS & TRADEMARKS

- Patient Sleep Therapy Mask Selection Tool, US20200384229A1
- System and Method for Product Selection, US20210182936A1
- System and Method for 3D Scanning, US10935376B2
- Providing a Mask for a Patient based on a Temporal Model generated from a Plurality of Facial Scans, US10881827B2