



# Shruthi Gowda

PhD Candidate | (Prev) Research Engineer

Researcher, Engineer & Tech Lead with 10 years of experience in Computer Vision, Machine Learning, Deep Learning and Embedded Software, in Autonomous Driving (ADS), Quality & Inspection and Healthcare applications.

Research Interests - Neuro-inspired AI, Cognitive Bias, Continual Learning, Robustness, Multi-Modality Learning

## Contact

Phone +31 (0) 644609589  
Email : shruthi.ngowda@outlook.com  
Address : Eindhoven, Netherlands  
Links : [Google Scholar](#)  
[Github](#)  
[LinkedIn](#)

## Education

PhD  
Eindhoven University of Technology (TU/e), Netherlands  
2023-Present

MSc - Electrical and Computer Engineering  
Universitat Politècnica de Catalunya (UPC), Spain & Université Catholique de Louvain (UCL), Belgium  
2010 - 2012

Bachelor of Engineering - Electronics and Communication  
Visvesvaraya Tech. University (VTU), India  
2006 - 2010

## Expertise

- DL: PyTorch, TensorFlow, ONNX
- Programming: C, C++, Python, LabVIEW, MATLAB, OpenCV
- Optimizations: SSE, Intel IPP, TBB, OpenVINO, Intel DAAL, TensorRT
- Others: OpenCL, Docker, Kubernetes
- Certifications: Machine Learning & Deep Learning Specialization
- Process: Agile, Scrum

## Experience

- **2019 - 2023**  
Advanced Research Lab | NavInfo Europe B.V, Netherlands  
**AI Research Engineer**  
Specialized in exploring, designing, and implementing state-of-the-art deep learning technologies to address challenging problems in the autonomous driving domain.  
Research Highlights : Adversarial Robustness, Shortcut Learning, Continual Learning on the Edge, Cognition-inspired AI solutions
- **2013 - 2019**  
Vision R&D | National Instruments (NI), India  
**Senior Software Engineer**  
Led the development and release of the Vision Development Module, an advanced Computer and Machine Vision Library, with specialized features for visual defect detection in industrial inspection application.
- **2012 - 2013**  
Image and Signal Processing group | UCL, Belgium  
**Research Assistant**  
Worked on multi-view geometry, calibration and 3D vision.  
Project - Virtual Viewpoint Reconstruction in a Multi-Camera Network

## Projects

- ENFIELD | European Union Horizon Project  
Adaptive AI  
Researching and developing effective and efficient AI algorithms that are lifelong learners, robust, fair and trustworthy. Collaborations with 15 other universities, research institutes and industries to enable adaptive AI in Europe.
- SAFEXPLAIN | European Union Horizon Project  
Safe and Explainable Critical Embedded Systems based on AI  
Tech Lead of DL and Automotive use case - designed safety patterns, developed novel explainable AI components, a reliable and traceable system design for autonomous driving which adheres to FUSA standards
- A Comprehensive Scene Understanding and Object Recognition Suite for ADS | NIE  
Design of an extensive framework with training, evaluation and analysis functionality. Developed ADS product for accurate detection of road users, signs and precise localization of lanes and road markings

# Patents

---

European Patent 22159288.4

AI Based Change Detection System for Executing a Method To Detect Changes In Geo-Tagged Videos To Update HD Maps.

US Patent 17/894,870

Method and System for Instilling Shape Awareness to Self-Supervised Learning Domain.

Dutch Patent 020065 NL-PD

LSFSL: Leveraging Shape Information in Few-shot Learning.

US Patent 019922 US-PD-VB/kk

Method to Add Inductive Bias into Deep Neural Networks.

US Patent 17/581,759

Deep Learning Based Multi-Sensor Detection System.

Dutch Patent 020050 NL-PD1

Cognitive Continual Learning System.

# Awards & Honors

---

Engineering Excellence Award | 2016

In Recognition of leading innovative ideas and products | National Instruments, Texas.

Rookie of The Year Award | 2013

In Recognition for the outstanding achievement and contribution | National Instruments, Texas.

Erasmus Mundus Fellowship | 2010-2012

Fellowship offered by European Union to International Students to study in consortia of universities across Europe.

Pratibha Puraskar | 2006

Honor by the Indian Govt. for the top 0.1% of top scorers in Class 12.

Anonymizer for GDPR compliance | NIE

Shipped Anonymizer product for GDPR compliance. The product includes a perception module to detect, classify and blur the faces, license plates in videos.

Change Rate Detection for HD map updation | NIE

Designed and implemented a change rate analysis system to detect modifications in road traffic signs, traffic barriers, overhead structures, and lanes. Facilitated the updating of high-definition maps crucial for safe motion planning of autonomous vehicles.

Accelerated Deep Learning Inference | NI R&D

Led the development of a high-performance Deep Learning Optimized Inference Engine, integrating TensorFlow and Intel OpenVINO libraries for rapid deployment of models on NI embedded hardware for dense prediction applications.

Machine Vision Library for Industrial Inspection | NI R&D

Developed and shipped industrial defect inspection products as part of the NI Machine Vision library. Implemented robust computer vision and 3D vision techniques, contributing to reliable quality control and inspection processes.

# Publications

---

Conserve-Update-Revise to Cure Generalization and Robustness Trade-off in Adversarial Training

ICLR 2024

Shruthi Gowda, Elahe Arani, Bahram Zonooz

Dual Cognitive Architecture: Incorporating Biases and Multi-Memory Systems for Lifelong Learning

TMLR 2023

Shruthi Gowda, Elahe Arani, Bahram Zonooz

LSFSL: Leveraging Shape Information in Few-shot learning

CVPR 2023 - Workshop on Learning with Limited Labelled Data

Shruthi Gowda, Elahe Arani, Bahram Zonooz

A Comprehensive Study of Real-Time Object Detection Networks Across Multiple Domains: A Survey |

TMLR 2022 with Survey Certification

Shruthi Gowda, Elahe Arani, Ratnajit Mukherjee, Haris Iqbal, Shabbir Marzban, Ahmed Badar, Terence Brouns, Bahram Zonooz

InBiasedD: Inductive Bias Distillation to Improve Generalization and Robustness through Shape-awareness

CoLLAs 2023

Shruthi Gowda, Elahe Arani, Bahram Zonooz

AI Driven Road Maintenance Inspection

ITS World Congress, 2021

Shruthi Gowda, Elahe Arani, Bahram Zonooz

Does Thermal data make the detection systems more reliable?

NeurIPS - ML4AD workshop, 2021

Shruthi Gowda, Elahe Arani, Bahram Zonooz