

Chandran Nandkumar

Robotics & AI Engineer • Amsterdam, Netherlands • ✉ Email • in LinkedIn • GitHub

EDUCATION

TU DELFT

MSc. IN ROBOTICS

Apr 2024 | Delft, NL

GPA: 8.09/10.0

(Fast-tracked, completed 4 months ahead of schedule)

NITK SURATHKAL

BTECH. IN MECHANICAL

ENGINEERING

MINOR IN MANAGEMENT

May 2022 | Mangalore, IN

CGPA: 8.12/10.0

SKILLS

ROBOTICS

ROS2 • Nav2 • Stereo Vision •
Depth/Point Clouds • URDF

COMPUTER VISION

YOLO • Data Augmentation •
Instance Segmentation •
Real-time Local Inference

GENERATIVE AI

Transformers • HuggingFace •
RAG • Fine-tuning •
Embeddings • STT/TTS
Systems

PUBLICATIONS

C. Nandkumar and L. Peternel,
"Enhancing supermarket robot
interaction: an equitable
multi-level LLM conversational
interface for handling diverse
customer intents" **Frontiers**

C. Nandkumar, et al.,
"Simulation of Indoor
Localization and Navigation of
Turtlebot 3 using Real Time
Object Detection," **IEEE
CENTCON 2021**

ACHIEVEMENTS

Multiple-time hackathon winner
(Snap Inc, EF, Forgis)

Treasurer, Study Association
ASIMOV

IEEE Project Competition - Best
Project (700+ entries)

EXPERIENCE

QAFKA ROBOTICS | ROBOTICS AND AI ENGINEER

July 2024 - Present | Delft, Netherlands

- Owned and deployed a real-time perception stack for autonomous robotic alignment, fine-tuning and integrating YOLOv11 for twistlock and corner-cast detection (**96.7% mAP**) under varied lighting and occlusion conditions.
- Built an end-to-end ML pipeline : dataset curation, polygon annotation, preprocessing, advanced augmentation, training, and offline deployment for real-time inference on robotic hardware.
- Integrated stereo vision depth maps and point clouds for 3D pose estimation and precise robot positioning using ROS2 TF transformations.
- Designed and implemented a hierarchical state machine combining perception, navigation (Nav2), PID control, and Extended Kalman Filters, enabling robust tracking and motion execution.
- Developed safety-critical embedded control on ESP32 for column and gripper actuation, implementing manual/automatic pause, resume, and emergency stop logic.

CAREERSWITCH | FULL STACK AND AI INTERN

May 2024 - July 2024 | Netherlands

- Developed an embedding-based job-candidate matching system, extracting and ranking skills from unstructured job descriptions using modern NLP and LLM pipelines.
- Implemented cosine-similarity and weighted scoring mechanisms to improve relevance and ranking quality in vacancy matching.
- Optimised matching latency by precomputing embeddings and automating skill extraction using GPT-3.5 Turbo and GPT-4o, enabling scalable matching at production speed.

PROJECTS

UNSPPOOL - VOICE JOURNAL & AUTOBIOGRAPHY APP | MOBILE APPLICATION DEVELOPMENT

Jun 2024 - Present | Available on Play Store and App Store (unspool.xyz)

- Designed and built a production Flutter app combining voice-to-text journaling with AI-driven reflection and mood analysis.
- Implemented GPT-4o mini audio transcription and GPT-powered sentiment extraction, visualising emotional trends over time.
- Built secure multi-layer authentication (Google/Apple/email sign-in, PIN protection) and privacy-focused user profiles.
- Implemented encrypted cloud storage and sync using Firebase, ensuring privacy and seamless multi-device access.

MULTI-LLM CONVERSATIONAL AI FOR SUPERMARKET ROBOTS |

MASTER'S THESIS | SUPERVISOR : DR. LUKA PETERNEL

Feb 2023 - Apr 2024 | TU Delft

- Developed a hierarchical conversational system for supermarket robots using Retrieval-Augmented Finetuning of LLMs, significantly improving user satisfaction and outperforming state-of-the-art GPTs.
- Fine-tuned a DistilBERT-based query classifier achieving an 86.79% accuracy rate, optimising query routing and enhancing response relevance.
- Designed a multi-tier LLM framework with specialised high-, medium-, and low-level models, improving intent recognition and personalised product recommendations through hierarchical reasoning.
- Integrated LLM outputs with robotic navigation systems, enabling autonomous shelf-directed item retrieval and improving operational efficiency in dynamic retail environments.