# An Thai **Le**

Robotics research · Research Assistant

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## Research Interest

My research interest focuses on probabilistic state estimation, learning and planning in mobile robotics (e.g autonomous driving, mobile entities). In particular, I am motivated by the combination of decision theory and machine learning addressed by Reinforcement Learning, which focuses on learning systems that are able to reason a sequence of actions yielding the most informative future data.

## Education

### University of Stuttgart

*Stuttgart, Germany*

M.Sc. in Information Technology

*2019 - 2021*

### Frankfurt University of Applied Science

*Frankfurt am Main, Germany*

B. Eng. in Electrical Engineering and Information Technology - German GPA: **1.5** - US GPA: 3.7/4.0

*2015 - 2019*

Thesis: "Approaches to solve kidnapped robot problem" [link]

### Le Hong Phong High School for the gifted

*Ho Chi Minh City, Vietnam*

majoring in Applied Physics - GPA: **9.2/10**

*2012 - 2015*

## Open-source Projects

### RoboComp's basic components

*Stuttgart, Germany*

Google Season of Doc 2019

*September 2019 - November 2019*

- Document robotics components such as hardware drivers, cognitive processing components, etc.
- Document tutorial of combining these components in RoboComp ecosystem for specific robotics tasks.
- Project website: [link], Project proposal: [link].

### Flexible perception pipeline manipulation for RoboSherlock

*Institute of Artificial Intelligence, University of Bremen, Germany*

Google Summer of Code 2018

*May 2018 - August 2018*

- Implement paralleled pipelines scheduler API.
- Improve performance of Robosherlock pipelines by paralleling pipeline processes.
- Implement robotics module dependencies query interface.
- Project: [link]. Docs: [link], Certification: [link].

### Multi-modal Cluttered Scene Analysis in Knowledge Intensive Scenarios

*Institute of Artificial Intelligence, University of Bremen, Germany*

Google Summer of Code 2017

*June 2017 - September 2018*

- Implement symmetry-based object segmentation algorithm in complex and cluttered scene.
- Implement object segment API for grasping system.
- Project: [link]. Demo: [link] Documentation: [link]. Certification: [link].

## Experience

### HLRS - High Performance Computing Center

*Stuttgart, Germany*

Student Research Assistant

*November 2019 - Present*

- Research and implement in C++ new parallel programming models.
- Implement back-end functionalities in DASH project http://www.dash-project.org/
- Maintain and configure HPC systems in HLRS.

### Frankfurt University of Applied Science

*Frankfurt am Main, Germany*

Research Assistant

*May 2019 - September 2019*

- Work with Prof. Peter Nauth to develop task-oriented robotics system that combines navigation and object grasping system.
- Research on applying Reinforcement Learning in robotics control to enhance control stability generalization on variety of task descriptions.
- Guide new student to operate robots in the Autonomous lab.

### EyeQ Ltd.

*Ho Chi Minh city, Vietnam*

Robotics Engineer Intern

*March 2018 to August 2018*

- Collaborate with dev team to develop practical technical solution for customers, using various Machine Learning methods.
- Develop autonomous navigation system for mobile robot that is used in many industrial applications.

**Intel Corporation** *Ho Chi Minh city, Vietnam*

Product Development Engineer Intern *Jan 2017 to May 2017*

- Design and develop automated data systems to process and analyze high volume unit test data in Intel Assembly & Test Manufacturing.
- Weekly validate and report the quality of Intel Thunderbolt Product.
- Letter of Evaluation can be viewed in this link.

## Skills

### Linguistic

- **English** IELTS: 7.0/9.0 (Certified in 2019)
- **German**: Elementary proficiency
- **Vietnamese**: First language

### Computer Science

- **Language**: Python 2 & 3, C++11 & 14, Java, UNIX
- **Libraries and Frameworks**:
  - **Data Sciences**: numpy, sklearn, scipy, pandas, tensorflow.
  - **Robotics**: ROS, RoboComp, Gazebo, openAI Gym.
  - **Others**: LaTeX, Matlab

## Honors & Awards

### Scholarships

- **DAAD Scholarship**, German Academic Exchange Service for study stay in Germany.
- **AmCham Scholarship**, Best of the Bests Award 2017: Top application score, top interview score.
- **eSilicon Scholarship**, Sunflower Mission 2017 Engineering & Technology Scholarship for Excellence

### Competitions

**Hackdays Rhein-Main Best solution Winner** *Frankfurt am Main, Germany*

Hackdays Rhein-Main *May 2019*

- Develop an app solution for dialysis patients to plan an optimal travelling round trip via cities, where dialysis treatments are possible.
- Work as Backend Developer to design optimized algorithms for trip planning and scheduling Competition website: https://www.hackdays-rheinmain.com

**UNESCO Hackathon Vietnam Winner** *Ho Chi Minh City, Vietnam*

FOSSASIA and UNESCO *October 2018*

- Develop the web application, Klima Kage to provide up-to-date climate and environment data for journalists
- Project: [link].

## Publications

### Conference papers

- ***An T. Le**, M. Q. Bui, T. D. Le and N. Peter*, "D* Lite with Reset: Improved Version of D* Lite for Complex Environment," 2017 First IEEE International Conference on Robotic Computing (IRC), Taichung, 2017, pp. 160-163. doi: 10.1109/IRC.2017.52

- *T. D. Le, **An T. Le** and D. T. Nguyen*, "Model-based Q-learning for humanoid robots," 2017 18th International Conference on Advanced Robotics (ICAR), Hong Kong, China, 2017, pp. 608-613. doi: 10.1109/ICAR.2017.8023674

- *Q. H. Nguyen, T. N. P. Tran, D. D. Huynh, **An T. Le** and T. D. Le*, "Real-Time Localization and Tracking System with Multiple-Angle Views for Human Robot Interaction," 2017 First IEEE International Conference on Robotic Computing (IRC), Taichung, 2017, pp. 316-319. doi: 10.1109/IRC.2017.53

### Book chapters

- *Khiem N. Doan, **An T. Le**, Than. D. Le & Pether Nauth. (2015). "Swarm Robots' communication and cooperation in motion planning". In Dan Zang & Bin Wei(Eds.), Lecture Notes in Mechanical Engineering (Part I, Chapter 15) Mechatronics and Robotics Engineering for Advanced and Intelligent Manufacturing (pp 191-205), Springer International Publishing. DOI 10.1007/978-3-319-33581-0_15.*

- ***An T. Le** and Than D. Le* (September 26th 2018). Search-Based Planning and Replanning in Robotics and Autonomous Systems, Advanced Path Planning for Mobile Entities, Rastislav Róka, IntechOpen, DOI: 10.5772/intechopen.71663. Available here.

## Workshops

- **Presented *An T. Le***, "Search-based path planning and re-planning for robotics" The first International Workshop on Automation and Robotics, Vietnamese-German University, Vietnam, 2017.