

Tanay Choudhary

<https://tanay-choudhary.github.io>
Cambridge, MA • tanayc9@gmail.com

SUMMARY

Senior Software Engineer and Robotician with 8+ years of industry experience.

EDUCATION

NORTHWESTERN UNIVERSITY

MS IN ROBOTICS

Dec 2016 | Evanston, IL

GPA: 3.89 / 4

BITS PILANI UNIVERSITY

BE (HONS) IN MECHANICAL ENGINEERING

Aug 2015 | Goa, India

LINKS

LinkedIn: [linkedin.com/in/tanayc](https://www.linkedin.com/in/tanayc)

Portfolio: tanay-choudhary.github.io

Github: github.com/tanay-bits

COURSES/

CERTIFICATIONS

Data Structures and Algorithms

Nanodegree (Udacity)

Robotic Manipulation

Machine Learning

Computer Vision

Artificial Intelligence

Controls

SKILLS/TOOLS

Meta-Skills

- Agile Software Development
- Critical Thinking • Resilience

Programming Languages

• C++ • Python • Java • Bash

Operating System

• Linux

SW Libraries and Tools

- ROS • Gazebo • Bazel
- PCL • OpenCV
- Git • Gerrit
- Jenkins • Ansible

EXPERIENCE

WOVEN BY TOYOTA | SENIOR SOFTWARE ENGINEER

Motion Planning | Sep 2022 – present, Cambridge, MA (remote)

Developing the next generation of advanced driver assist and autonomy features for software-defined vehicles.

VECNA ROBOTICS | SENIOR ROBOTICS SOFTWARE ENGINEER

Robot Autonomy | Oct 2018 – Sep 2022, Waltham, MA

- Responsible for developing, integrating, testing, deploying, and maintaining the autonomy stack of Vecna's suite of mobile heavy material handling robots
- As the module owner for navigation, developed best-in-class path planning and obstacle avoidance features which significantly improved speed and robustness in tight, dynamic spaces
- Brought key improvements to pallet docking behaviors which increased pallet handling reliability and throughput in long, densely packed lanes
- Led autonomy software design, development, and integration for a new, low-cost, collaborative robot product
- Unlocked an untapped use-case by leading a team which developed autonomy SW for a completely new platform for robotic shelf picking
- As the C++ domain owner, discussed and documented best practices, encouraged their use via code reviews, emphasized removal of tech debt

VECNA TECHNOLOGIES | ROBOTICS SOFTWARE ENGINEER

Robot Autonomy | Mar 2017 – Sep 2018, Cambridge, MA

- Implemented 3D teleoperation, control, and path planning modules for a dual arm mobile manipulator using C++, ROS, RViz and MoveIt
- Integrated a grasp pose detection library for autonomous picking of arbitrary objects using CNN on point cloud data from a depth sensor

HARMAN INTERNATIONAL | SUMMER INTERN, FUTURE EXPERIENCE

Corporate Technology Group | Jun 2016 – Sep 2016, Mountain View, CA

Exploratory R&D and rapid end-to-end prototyping of a new kind of headphones with ungrounded force actuators to provide instinctive, non-visual and non-auditory feedback to the wearer. I designed and created fully working prototypes, and showcased them to the broader research and business teams.

TECHNICAL UNIVERSITY OF DARMSTADT | BACHELOR'S THESIS

LaufLabor Locomotion Lab | Feb 2015 – May 2015, Germany

Thesis title: Gait Analysis and Control Design for Stair Ambulation with Lower-Limb Powered Prostheses | Advisor: Prof. Andre Seyfarth
Performed motion-capture gait experiments on an instrumented staircase, processed the raw data in MATLAB, contributed two new control insights for gait intent and gait percent detection in wearable lower-extremity robots, and obtained significant savings in Series Elastic Actuator peak power and energy requirements

OTHER PROJECTS

INTUITIVE TELEOPERATION OF A DUAL ARM MANIPULATOR

- Created a ROS package for the Baxter robot, which uses skeleton data from a depth camera to track user's hand movements via joint velocity control
- Developed a custom numerical inverse kinematics solver which finds the optimum set of joint angles to minimize joint travel in addition to reaching target end-effector position
- Featured in National Robotics Week exhibit at the Chicago Museum of Science & Industry