Dominik Nasilowski

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SUMMARY

I am a Robotics engineer with 5+ years of experience in developing autonomous robotic systems from idea to market including developing high-precision sensors and advanced robotic control algorithms, that resulted in IP worth $15M+.

WORK EXPERIENCE

Robotics Engineer at **Fishman Corporation** [Precision dispensing pioneer since 1958, $6M annual revenue] April 2024 - Present

- Led development of SmartAutomation, an AI-powered robotic system integrated with Fishman's high-precision SmartDispenser
- Handled conceptual and detailed mechanical and motion controls designs of the robot from the ground up
- Programmed complex robot motion and high-speed calibration routines achieving 10μm accuracy using optimal control methods
- Managed a team of 7 engineers, cutting development costs by 40% while meeting all speed, precision, and load requirements from a diverse group of customers

Controls Engineer at **Robotics And Rehabilitation laboratory (ROAR)** [Top 1% Rehabilitation labs] Jan 2023 – May 2024

- Pioneered the development of a phase-based algorithm for a Two Degrees of Freedom (2DOF) Pneumatic Ankle Foot Orthosis (PAFO) device, enhancing mobility for individuals with locomotor challenges, such as stroke patients
- Distinguished the axes and positions of three actuators through a bespoke algorithm, amplifying the precision of the device to the 0.1 mm and its adaptability to diverse user needs

Project Manager at **InPhoTech** [World record in data transmission 296 Tb/s in 2021] Jan 2022 - April 2023

- Led 2 research projects counting 15 members on developing a fiber-optical sensor of temperature with high accuracy of 0.1℃ to analyze Climate Change
- Presented research work to 2 different institutes in order to enhance research performance and compare sensor accuracy
- Coordinated creation of 3 Gantt charts and individual schedules to increase effectiveness of team's work time
- Conducted design of a thermal chamber to increase its calibration accuracy to 0.01℃ without interfering with sensor's design

Robotics Engineer at **Robotics And Rehabilitation laboratory (ROAR)** [Top 1% Rehabilitation labs] Sept 2022 - Dec 2022

- Engineered a gyroscope glove that mitigates essential hand tremor by incorporating 2 gyroscopes countering hand's shaking instability across 2 axis, improving the user's precision and control in daily activity such as writing or eating
- Developed and programmed a controller to regulate the gyroscope's axis of rotation to effectively damp major hand's tremor.

DESIGN PROJECTS

Robotics Leader, *Robotics Studio – Columbia University* Jan 2023 – May 2023

- Designed a bipedal robot, utilizing topology optimization, enabling it to walk and dance without relying on any sensors like IMU
- Developed a Pybullet simulation to analyze various walking patterns for the robot and employed the Hill Climbing optimization algorithm to fine-tune its walking styles for diverse terrains
- Implemented a Deep Neural Network model combined with a Linear Model Predictive Controller, accuracy increased by 36%
- Programmed booting, homing, and health alert functions of the robot, with warnings communicated through voice alerts

Controls Mechanical integration Leader, *Senior Design Project - Purdue University* [Top 6th National Uni] Aug 2021 - Dec 2021

- Performed all FEA of produced parts to prevent failure and provide durability in terms of cycle life of an innovative device that increases grip strength so the user can perform simple daily tasks
- Designed the PID controller through controller design, then simulations in Simulink to achieve 0.01 second response time.

EDUCATION

Columbia University, *New York City, NY* Dec 2023

Master of Science in Mechanical Engineering, Concentration in Robotics and Control, GPA: 3.94/4.0

Purdue University, *West Lafayette, IN* Dec 2021

Bachelor of Science in Mechanical Engineering, GPA: 3.87/4.0

Tau Beta Pi | Pi Tau Sigma - Engineering Honor Society | Dean's List & Semester Honors

SKILLS

- Computer software: MATLAB, Simulink, LabVIEW, ROS, Ansys, Abaqus, CATIA, Autodesk Fusion 360, SolidWorks
- Computer languages: Assembly, C/C++, Python, PLC (IEC 61131-3), HTML, Wrike, Microsoft Project
- Controls Theory, Optimal Control, Model-Predictive Control, State Estimation, Evolutionary algorithms, Machine Learning, Neural Network, Simulation & Modeling, BOM
- Certificates: **Stanford University** - The Mathematics of Symmetry, Project Management Principles