

# Ashton Dy

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## Education

2027 **Bachelor of Science, Computer Science** – The University of Tennessee – Knoxville, Tickle College of Engineering  
University Honors Program, Engineering Honors Program, *Summa Cum Laude*,  
GPA: 4.0

## Research Experience

May 2025 - **Undergraduate Research Assistant, Dr. Kostas' Lab**  
Present

- Developed and fine-tuned an LLM-based molecule generation pipeline with reinforcement learning.
- Applied machine learning to validate binding affinity scoring functions for de novo drug discovery.

Feb2025 - **Undergraduate Research Assistant, AURAS Lab**  
Aug 2025

- Investigated robotics-computer vision intersections under Fei Liu, PhD.
- Labeled and augmented 30,000+ images to improve classification model performance.

March 2024 - **Undergraduate Research Assistant, Dr. Zhao's Lab & EPIC Lab**  
May 2025

- Conducted literature review on human-robot interaction for social and physical robots.
- Programmed quadrupeds (Unitree Go2 & B1) using ROS.
- Designed a study on seniors' perceptions of robotic assistance; created quantitative/qualitative surveys and an interactive activity.
- Built a TensorFlow classification model after cleaning and labeling raw data.

## Publications

- 2025 Azizul Zahid, Jie Fan, Farong Wang, **Ashton Dy**, Sai Swaminathan, Fei Liu. "Toward Aligning Human and Robot via Multi-Modal Demonstration Learning", ICRA 2025 Workshop, 2025.  
<https://arxiv.org/abs/2504.11493>.

## Professional Experience

- May 2025 – **Software Engineer Intern, Clayton Homes**  
Aug 2025
- Spearheaded the first AI-powered internal tool, creating a Model Context Protocol (MCP)-based RAG pipeline used by 10,000+ employees.
  - Developed an MCP-powered AI chatbot with a custom web interface integrated with Confluence, SharePoint, Jira, and GitHub through AWS Kendra.
  - Deployed the backend with Docker and Elastic Container Services under an Application Load Balancer; hosted frontend via S3 + CloudFront.
  - Leveraged AWS Bedrock for cloud-hosted LLMs and implemented IAM roles, permissions, and policies.
  - Practiced Agile principles: sprint planning, ticketing, and daily stand-ups.
- Nov 2024 – **Software Engineer Intern, Function Solutions**  
Mar 2025
- Designed and developed a HIPAA-compliant medical data tracking system for the Tennessee Department of Correction, securely managing records for 320+ patients.
  - Implemented JSON Web Tokens and data encryption to safeguard patient information and meet HIPAA standards.
- Aug 2024 – **Resident Assistant, University of Tennessee Housing**  
May 2025
- Fostered a community of 58 upperclassmen through 13 engaging programs and 50+ individual meetings.
  - Collaborated with other staff to support residents and improve campus life

## Technical Skills

### **Programming Languages**

- Python, C++, JavaScript, Java, HTML, CSS, RISC-V Assembly

### **Technologies & Frameworks**

- PyTorch, TensorFlow, rdkit, pandas, MongoDB, Express.js, React.js, Node.js, SASS, Framer Motion

### **Tools**

- Docker, AWS (ECS, S3, CloudFront, IAM, Kendra, Bedrock), Linux, Windows, GitHub, Fusion 360, Blender, Microsoft Office, Google Suite

## Involvement

- Jan. 2024 – Present     **Events Director, Society of Asian Scientists and Engineers**
- Designed and organized 15 events for the full academic year, collaborating with other collegiate and professional organizations

- March 2024 – Present     **Active Member, Tau Beta Pi**
- Invitation-only engineering honors society that recognizes the top 12.5% of juniors and 20% of seniors

- Sept. 2025 – Present     **Active Member, Computational Biology and Sciences Club**
- Collaborated with others interested in computational sciences
  - Listened to presentations from faculty and participated in workshops relating to technology the computational sciences space

## Honors & Awards

University Honors

Engineering Honors (Cook Grand Challenge)

Summa Cum Laude Dean's List (Fall '23 – Spring '25)

Phi Kappa Phi – Top 7.5% of Juniors