

Department of Computer Science

Ph.D. Student Annual Progress Self-Evaluation

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Reporting Period: August 2025 – August 2026 (Year 4)

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At a Glance

 Program:	Ph.D., Computer Science	 Advisor:	Prof. Marcus Chen
 Year in Program:	4 of 5 (expected)	 Committee:	Formed Dec. 2023
 Funding:	Meridian Foundation Fellowship	 Contact:	e.vasquez@draymoor.edu

1 Introduction and Program Context

This document constitutes my Year 4 annual self-evaluation, prepared for review by my advisor, Prof. Marcus Chen, and the Draymoor University Computer Science Graduate Studies Committee. I entered the Ph.D. program in August 2022 and am currently a member of the Vertex Perception Lab, where my research focuses on shared-autonomy control and trust calibration for assistive robotic manipulators. My dissertation work is funded by a Meridian Foundation Graduate Fellowship in Robotics, renewed annually contingent on satisfactory progress.

The purpose of this report is threefold: to summarize research, teaching, and service activity over the 2025–2026 academic year; to document progress against the milestones I proposed at last year’s review; and to set concrete, dated goals for the coming year as I move toward dissertation completion. Where relevant, I reference committee feedback from the June 2024 proposal defense and incorporate it into the plan described in Section 6.

Program Timeline

I passed my qualifying examination in May 2023 and defended my dissertation proposal in June 2024, at which point I formally advanced to candidacy. My dissertation, provisionally titled “*Adaptive Shared Autonomy for Assistive Manipulation: Models of Control Allocation and Human Trust*,” is organized around three research aims, introduced here and revisited in Section 2:

1. **Aim 1** — Design adaptive control-blending policies that shift authority between a human operator and an autonomous controller in response to task difficulty.
2. **Aim 2** — Model how trust in the autonomous controller evolves under intermittent handoffs, and use that model to time handoffs more effectively.
3. **Aim 3** — Evaluate the resulting system on the Nimbus-7 assistive manipulator platform in a field deployment with end users.

Aim 1 was substantially completed prior to this reporting period and is summarized briefly for continuity. The bulk of this year’s effort was directed at Aims 2 and 3, described in detail below.

2 Research Progress

2.1 Milestone Timeline

Figure 1 summarizes major program milestones from matriculation through the current reporting date, alongside the target dissertation defense. This year’s reporting window (Aug. 2025 – Aug. 2026) is marked in gold.

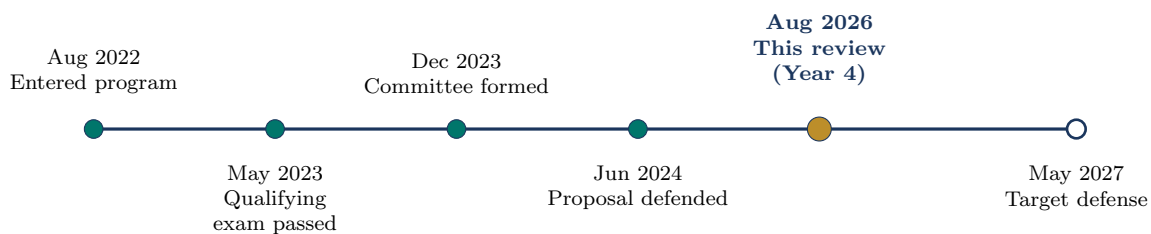


Figure 1: Program milestones to date, with the current reporting point highlighted.

2.2 Aim 1 — Adaptive Control Blending (completed prior years)

Aim 1 produced a control-blending policy that adjusts the authority split between operator and autonomy controller based on a real-time estimate of task difficulty, extending the shared-autonomy framing of [Chen and Alvarado \[2021\]](#). This work was published at WHRC 2025 (Section 3) and forms the control substrate used in Aims 2 and 3.

2.3 Aim 2 — Trust Calibration under Intermittent Handoffs

This year I completed data collection and analysis for a 48-participant lab study measuring how operator trust responds to autonomy handoffs of varying frequency and predictability, building on the trust-dynamics model proposed by [Okafor and Marsh \[2022\]](#). The resulting Bayesian filtering model predicts trust trajectories with a mean absolute error of 0.09 on a 7-point scale, a meaningful improvement over the fixed-decay baseline (0.21 MAE) used in prior work. A manuscript describing this model is currently under review (Table 2).

2.4 Aim 3 — Field Deployment on Nimbus-7

In collaboration with the Apex Autonomy Group, I adapted the Aim 1–2 control and trust pipeline for the Nimbus-7 assistive manipulator and ran a two-week pilot deployment at a partner assisted-living facility with six residents. Results from the pilot were published as a short paper (Section 3); the full field study (target $n = 40$) is scheduled for October 2025 and is the primary Year 5 milestone (Table 4).

2.5 Progress Summary

Table 1: Status of dissertation research aims against the plan proposed at the June 2024 proposal defense.

Aim	This Year’s Milestone	Status
Aim 1: Control blending	Publish core algorithm and baseline evaluation	Complete
Aim 2: Trust calibration	Run 48-participant study; fit trust model	Complete
Aim 3: Field deployment	Pilot deployment (6 residents); design full study	On Track
Aim 3: Full field study	Recruit and run 40-participant deployment	Needs Attention

The full Aim 3 field study is flagged **Needs Attention** because participant recruitment through the partner facility has taken longer than anticipated; this is addressed directly in the Year 5 plan (Section 6).

2.6 Weekly Effort Allocation

Figure 2 reports my average weekly effort allocation across activities this year, based on a running log kept since September 2025.

3 Publications and Presentations

3.1 Publications

Table 2 lists publications and manuscripts arising from my dissertation work this year and in the prior year for continuity. Full citations appear in the bibliography.

The RSS 2026 submission (in prep) synthesizes Aims 1 and 2 into a single preference-learning

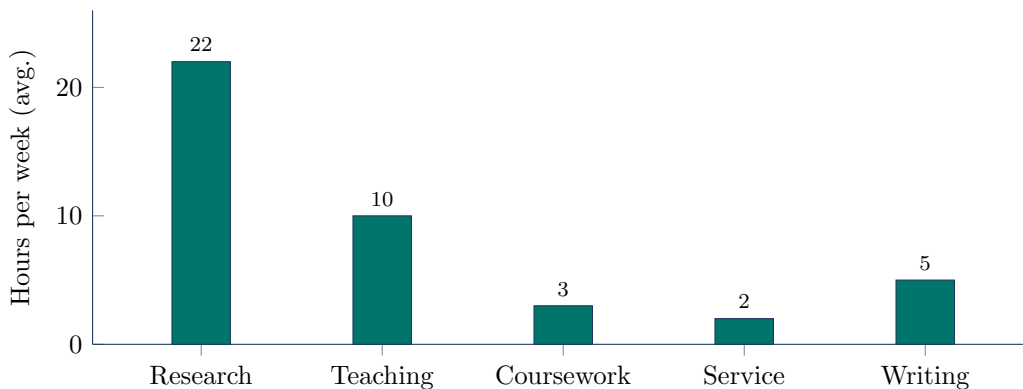


Figure 2: Average weekly hours by activity, Sept. 2025 – Aug. 2026 (self-logged).

Table 2: Publications and manuscripts, most recent first.

Title and Venue	Role	Status
Personalized Autonomy Allocation via Bayesian Preference Learning [Vasquez and Chen, 2026] – target: RSS 2026	First author	In prep
Trust Calibration under Intermittent Autonomy Handoffs [Vasquez et al., 2026] – Journal of Adaptive Robotics	First author	Under review
Field Deployment of Nimbus-7 in Assisted Living Settings: A Pilot Study [Vasquez, 2025] – Assistive Technology Outcomes and Benefits	First author	Published
Adaptive Blending for Shared-Autonomy Assistive Manipulation [Vasquez and Chen, 2025] – IEEE/RSJ Workshop on Human-Robot Collaboration	First author	Published
Benchmarking Latency-Aware Control Policies for Teleoperated Manipulators [Vasquez and Reyes, 2024] – Synapse Robotics Technical Report	Co-author (with T. Reyes)	Technical report

framework and is the paper I expect to anchor my dissertation’s core chapter; a full draft is targeted for December 2025 (Section 6).

3.2 Talks and Posters

- **Invited talk**, “Trust-Aware Handoffs in Shared-Autonomy Systems,” Apex Autonomy Group Joint Research Seminar, Feb. 2026.
- **Poster**, “Field Deployment of Nimbus-7 in Assisted Living Settings,” IEEE/RSJ Workshop on Human-Robot Collaboration, Oct. 2025.
- **Departmental seminar**, “Bayesian Trust Filtering for Autonomy Handoffs,” Draymoor University CS Robotics Seminar Series, Nov. 2025.
- **Lab presentation**, Vertex Perception Lab group meeting, quarterly progress updates (Sept.

2025, Dec. 2025, Mar. 2026, Jun. 2026).

3.3 Grants, Awards, and Travel Support

- Meridian Foundation Graduate Fellowship in Robotics – renewed for Year 4 (\$34,000 stipend plus tuition).
- Draymoor Graduate School Conference Travel Grant, \$1,200, for WHRC 2025 attendance.
- Best Poster runner-up, WHRC 2025 workshop poster session.

4 Teaching

4.1 Teaching Assignments

Table 3 summarizes my teaching-assistant assignments over the reporting period and the prior year for continuity. Median evaluation scores are drawn from anonymized end-of-term student surveys on a 5-point scale.

Table 3: Teaching assistant assignments and student evaluation summary.

Course	Term	Role	Enrollment	Median Eval.
CS 4820: Human-Robot Interaction	Spring 2026	Lead TA	34	4.8 / 5.0
CS 3510: Introduction to Robotics	Fall 2025	Lead TA	86	4.6 / 5.0
CS 1100: Introduction to Programming	Fall 2023	TA	120	4.3 / 5.0

As Lead TA for CS 4820 and CS 3510, my responsibilities included holding weekly office hours, designing and grading three programming assignments per course, co-authoring the CS 3510 final project rubric, and supervising two undergraduate graders.

4.2 Instructor Feedback

“Elena’s office hours consistently ran long because students kept showing up – she has a knack for explaining control-loop debugging in a way that clicks. Her rubric revisions cut our regrade requests in CS 3510 by roughly half compared to the prior offering.”

— *Prof. Marcus Chen, Instructor, CS 3510*

“I would put Elena in the top tier of TAs I’ve worked with over eleven years teaching CS 4820. She redesigned the trust-calibration lab from scratch and it’s now one of the best-reviewed units in the course.”

— *Prof. Linda Osei, Instructor, CS 4820*

4.3 Mentoring

I informally co-mentored two undergraduate research assistants in the Vertex Perception Lab this year (Priya Nandakumar and Owen Baptiste), reviewing weekly progress and pairing on Nimbus-7 data-collection scripts. Both continued in the lab as paid research assistants for a second semester.

5 Professional Development and Service

5.1 Training and Workshops

- **Summer research internship**, Synapse Robotics, Jun. – Aug. 2024. Benchmarked latency-aware control policies for teleoperated manipulators under a Synapse research scientist; resulted in an internal technical report and informed the trust-calibration model used in Aim 2.
- **Graduate Statistics Short Course**, Draymoor Graduate School, Bayesian methods module, Jan. 2026 (16 hours).
- **Responsible Conduct of Research** refresher, Draymoor University, required recertification, Sept. 2025.
- **Grant-writing workshop**, Draymoor Office of Graduate Fellowships, in preparation for the Year 5 Meridian Foundation renewal application, Apr. 2026.

5.2 Service

- **Peer reviewer**, IEEE/RSJ Workshop on Human-Robot Collaboration (WHRC 2026), two submissions reviewed.
- **Graduate Student Representative**, Department of Computer Science Climate and Inclusion Committee, 2025–2026.
- **Co-organizer**, Vertex Perception Lab weekly reading group (rotating paper selection and discussion facilitation).
- **Volunteer judge**, Draymoor University Undergraduate Research Symposium, robotics track, Apr. 2026.

5.3 External Collaboration

The Aim 3 field deployment was carried out in partnership with the Apex Autonomy Group, whose engineering team provided calibration support for the Nimbus-7 hardware and joint access to the partner assisted-living facility. This relationship, initiated during my Synapse Robotics internship, is expected to continue through the full field study in Year 5.

6 Self-Assessment and Year 5 Goals

6.1 Self-Assessment

Strengths

- Delivered on all Aim 1–2 milestones from the proposal, including a completed study and a fitted trust model ahead of the original schedule.
- Teaching evaluations improved year-over-year across both TA assignments, and rubric revisions measurably reduced regrade volume.
- Built a durable external collaboration (Apex Autonomy Group) that gives Aim 3 access to hardware and a field site the lab did not previously have.

Areas for Growth

- Field-study recruitment took three months longer than planned; I underestimated the facility’s own IRB and staffing review timeline.
- Manuscript turnaround from “results in hand” to “submitted” has consistently run 4–6 weeks longer than I budget for.
- I have not yet given a talk outside Draymoor or Apex; broadening visibility ahead of the job market is a gap.

Overall, I consider this a strong year: both lab-based research aims closed out on schedule and produced publishable results, and the field-deployment pilot validated the Aim 3 protocol before committing to the full 40-participant study. The primary risk to the overall timeline is recruitment lead time at the partner facility, which the Year 5 plan below now accounts for explicitly by starting recruitment earlier and in parallel with manuscript preparation.

6.2 Year 5 Goals

Table 4: Planned milestones for the 2026–2027 academic year.

Milestone	Target Date	Deliverable
Begin Aim 3 full-study recruitment	Sept. 2026	IRB amendment filed; recruitment underway at partner facility
Resubmit trust-calibration manuscript	Dec. 2026	Revised manuscript addressing reviewer comments
Submit RSS 2026 paper	Jan. 2027	Camera-ready submission on preference-learning framework
Complete Aim 3 field study ($n = 40$)	Mar. 2027	Full dataset collected and analyzed
Draft dissertation chapters 1–2	Apr. 2027	Chapter drafts circulated to committee
Schedule dissertation defense	May 2027	Defense date confirmed with full committee

6.3 Approvals

Student signature: _____ Date: _____ Advisor signature: _____ Date: _____

Committee chair signature: _____ Graduate program director: _____

Date: _____ Date: _____

References

- Marcus Chen and Sofia Alvarado. Shared autonomy for assistive manipulation: A control-blending framework. In *Proceedings of the International Conference on Human-Robot Collaboration (ICHRC)*, pages 118–129, 2021.
- David Okafor and Elena Marsh. Modeling operator trust dynamics under autonomy handoffs. *Journal of Adaptive Robotics*, 9(3):201–219, 2022.
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- Elena Vasquez and Teodoro Reyes. Benchmarking latency-aware control policies for teleoperated manipulators. Internal Technical Report SR-TR-2024-118, Synapse Robotics, 2024.
- Elena Vasquez, David Okafor, and Marcus Chen. Trust calibration under intermittent autonomy handoffs. *Journal of Adaptive Robotics*, 2026. Under review.