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Dzung Tran

Executive Summary

Dzung Tran is a doctoral student of the Department of Mechanical Engineering under Dr. Tansel Yucelen's advisement, and a member of Laboratory for Autonomy, Control, Information, and Systems (LACIS, `http://lacis.eng.usf.edu`) at the University of South Florida, Tampa, Florida since August 2016. He was also a graduate student at Missouri University of Science and Technology from August 2014 to August 2016 before moving to University of South Florida together with Dr. Yucelen. He received the Bachelor of Science degree in Mechanical Engineering from Missouri University of Science and Technology, Rolla, Missouri in May 2014. In addition, he participated in National Science Foundation Research Experiences for Undergraduates Summer Program at Florida State University, Tallahessee, Florida during Summer 2013, and summer program at the Munitions Directorate in Eglin, Florida in Summer 2015.

Dzung Tran's research specializes in distributed estimation and cooperative control, graph theory, and multiplex networks with applications to multiagent systems, robotics, and dynamic data driven applications systems. He also implemented algorithms and performed experiments on a wide range of ground robots and quadcopters including Qbots 2, Khepera IV, AR Drone, and Crazyflie. Additionally, he has experience in helping his adviser set up the lab at University of South Florida including purchase and set up the motion capture system (Vicon), safety net, computers, various mobile robot platforms and reserach equipments.

Education

2016–Present **Ph.D Candidate in Mechanical Engineering**.
University of South Florida
Current GPA: 4.0/4.0
Tentative dissertation:"On Spatial and Temporal Control of Multiagent System and Distributed Estimation in Heterogeneous Sensor Networks"
Advisor: Dr. Tansel Yucelen

2014–2016 **PhD Student**.
Missouri University of Science and Technology (transfered to University of South Florida)

2012–2014 **Bachelor of Science in Mechanical Engineering**.
Missouri University of Science and Technology
GPA: 3.967/4.0

2009–2011 **Undergraduate Student**.
Saint Louis Community College (transfered to Missouri University of Science and Technology)

Research Experience

2014–Present **Projects Participated:**.

- Energy Efficient Flight of Cruise Missiles through CFD Analysis and Feedback Control
  - Sponsor: Lockheed Martin
  - Investigator: Dr. Tansel Yucelen and Dr. Andres Tejada
  - December, 2018 - July, 2019
- Dolittle/Sofwerx Research Program
  - Sponsor: Dolittle/Sofwerx + Florida High Tech Corridor
  - Investigator: Dr. Sriram Chellappan
  - August, 2018 - July, 2019
- System-Theoretic Principles and Decentralized Sensor Network and Control Algorithms for Dynamic Data-Driven Situational Awareness and Response
  - Sponsor: Air Force Office of Scientific Research
  - Investigator: Dr. Tansel Yucelen
  - July 15, 2017 - July 14, 2018
- Multiagent Coordination over Prescribed Time Intervals: System-Theoretic Foundations and Distributed Control
  - Sponsor: Army Research Office
  - Investigator: Dr. Tansel Yucelen
  - October 1, 2017 - June 30, 2018
- Autonomous Multivehicle Systems for Real-Time Situational Awareness in Adverse Environments
  - Sponsor: Oak Ridge Associated Universities
  - Investigator: Dr. Tansel Yucelen
  - June 1, 2015 - May 31, 2016

Summer 2015 **The United States Air Force Summer Faculty and Student Fellowship Program**.

- Develop an distributed algorithm to manipulate size and orientation of a mobile robot formation.

2013–2014 **Opportunities for Undergraduate Research Program at Missouri S&T**.

- Write a LabVIEW program to interpolate and extrapolate the data of Atomic Force Microsopy.

2013 **National Science Foundation Research Experiences for Undergraduates Summer Program at Florida State University**.

- Write a computer program to reduce the execution time of a mobile robot's learning process to optimize energy when traversing across different surfaces.

Teaching and Mentoring Experience

2018–Present **Student Mentoring**.

- **Si Dang** (Undergraduate Student at University of South Florida – Spring 2019); (Mentor the student to work on visual-based controlling a ground robot to track an object.)
- **David Zamora** (Undergraduate Student at Princeton University – Summer 2018); (Mentor the student to design and build a gimbal-like system.)

2016–2018 **Graduate Teaching Assistant, Mechanical Engineering Lab I and II**.
Univeristy of South Florida

- Prepare class activities and guide 40+ students on doing experiments to gather and interpret data (Mechanical Engineering Lab I), and writing LABVIEW programs to acquire sensors' data and control systems (Mechanical Engineering Lab II).
- Grade assignments and assist students to understand class material.

2016 **Graduate Teaching Assistant, Mechatronics**.
Missouri University of Science and Technology

- Set up, prepare class activities, and guide 20+ students on controlling hydraulic system and rack and pinion system.
- Grade reports and assist students to understand class material.

2013-2014 **Undergraduate Peer Learning Assistant**.
Missouri University of Science and Technology

- Guide students in the learning process.

Honors and Awards

Missouri University of Science and Technology.

2014–2016 Chancellor's Fellowship to pursue a PhD

2012–2014 Placed on Honor Roll and Academic Scholar's List

Saint Louis Community College.

2010-1011 Dean's List

2010 Who's Who Among College and University Students

Since 2010 Member of Phi Theta Kappa (International Honor Society)

Publications

Journal Papers.

[J4] **D Tran**, T Yucelen, "Finite-Time Control of Perturbed Dynamical Systems Based on a Generalized Time Transformation Approach", Systems & Control Letters, 2019 (Submitted).

[J3] **D Tran**, T Yucelen, S Jagannathan, D Casbeer, "Distributed Coestimation in Heterogeneous Sensor Networks", International Journal of Control, 2019 (Accepted).

[J2] **D Tran**, T Yucelen, E Pasiliao, "Formation Control with Multiplex Information Networks", IEEE Transactions on Control Systems Technology, 2018.

[J1] **D Tran**, T Yucelen, SB Sarsilmaz, S Jagannathan, "Distributed Input and State Estimation Using Local Information in Heterogeneous Sensor Networks", Frontiers in Robotics and AI, 2017.

Conference Papers.

[C12] **D Tran**, T Yucelen, "A Generalized Time Transformation Method for Finite-Time Control", American Control Conference, 2018.

[C11] **D Tran**, T Yucelen, S Jagannathan, "Dynamic Information Fusion with the Integration of Local Observers, Value of Information, and Active-Passive Consensus Filters", AIAA Guidance, Navigation, and Control Conference, 2019.

[C10] J Jaramillo, T Wieczorek, **D Tran**, VS Dadi, T Yucelen, S Chellappan, "Experimental Validation of a Distributed Control Approach Based on Multiplex Networks on Formations of Unmanned Aerial Vehicles", AIAA Guidance, Navigation, and Control Conference, 2019.

[C9] **D Tran**, T Yucelen, SB Sarsilmaz, "Control of Multiagent Networks as Systems: Finite-Time Algorithms, Time Transformation, and Separation Principle", IEEE Conference on Decision and Control, 2018.

[C8] **D Tran**, T Yucelen, S Jagannathan, D Casbeer, "Distributed Coestimation in Heterogeneous Sensor Networks with Time-Varying Active and Passive Node Roles", American Control Conference, 2018.

[C7] **D Tran**, T Yucelen, S Jagannathan, "A New Result on Distributed Input and State Estimation for Heterogeneous Sensor Networks", ASME Dynamic Systems and Control Conference, 2017.

[C6] JD Peterson, G De La Torre, T Yucelen, **D Tran**, KM Dogan, D McNeely, "Resilient Control of Linear Time-Invariant Networked Multiagent Systems", ASME Dynamic Systems and Control Conference, 2017.

[C5] **D Tran**, T Yucelen, S Jagannathan, "On Local Design And Execution of a Distributed Input and State Estimation Architecture for Heterogeneous Sensor Networks", American Control Conference, 2017.

[C4] **D Tran**, T Yucelen, JD Peterson, "Resilient Control of Active-Passive Networked Multiagent Systems in the Presence of Persistent Disturbances", AIAA Guidance, Navigation, and Control Conference, 2017.

[C3] **D Tran**, T Yucelen, "On Control of Multiagent Formations Through Local Interactions", IEEE Conference on Decision and Control, 2016.

[C2] **D Tran**, T Yucelen, E Pasiliao, "Multiplex Information Networks for Spatially Evolving Multiagent Formations", American Control Conference, 2016.

[C1] **D Tran**, T Yucelen, "Control of Multiagent Formations: A Multiplex Information Networks-Based Approach", ASME Dynamic Systems and Control Conference, 2015.

Patents.

[P2] **D Tran**, T Yucelen, SB Sarsilmaz, "Distributed Process State and Input Estimation for Heterogeneous Active/Passive Sensor Networks", (Pending).

[P1] T Yucelen, **D Tran**, "Tools and Methods for Distributed Spatial Control of Swarms via Multiplex Information Networks", US Patent App. 15/838,889.

Talks.

[T2] **D Tran**, "Formation Control with Multiplex Information Networks", Embry-Riddle Aeronautical University, Daytona Beach, FL (seminar), 2019.

[T1] **D Tran**, "Formation Control with Multiplex Information Networks", University of Central Florida, Orlando, FL (seminar), 2018.

Technical Skills

Programming languages.

- MATLAB/Simulink
- Python
- LABVIEW
- HTML/CSS

Hand-on experience with robots and quadcopter.

- QBot 2
- Crazyflie
- Khepera IV
- AR Drone

Other.

- Windows OS
- OpenCV
- Raspberry Pi
- Linux
- Arduino

Languages

- English
- Vietnamese