ALEXANDER VON MOLL

PERSONAL INFORMATION

Born in USA, 31 May 1990

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GOAL

Make meaningful research contributions to the area of cooperative control while earning a PhD

WORK EXPERIENCE

2017— **Research Engineer, AFRL/RQQA**

Air Force Research Laboratory

Perform fundamental research as a member of the UAV Cooperative Control Team under the Autonomous Controls Branch of the Power and Control Division. Describe, define, and solve problems of interest to the Air Force in the areas of pursuit-evasion differential games and algorithms for persistent intelligence, surveillance, and reconnaissance.

2012–2017 **Research Engineer, AFRL/RQTE**

Air Force Research Laboratory

Served as Integrated Product Team member under several turbine engine technology programs. Established plans and roadmaps for turbine engine control technologies. Supported research programs in turbine engine control software, actuators, and sensors.

Sum. 2011 **Software Development Intern, Boeing**

Boeing

Developed support software and tools for the F-15SA flight control software group.

EDUCATION

2019— **University of Cincinnati**

PhD in Electrical Engineering

Current GPA: 4.0 · School: Engineering
Research: Game theoretic control strategies in adversarial environments
Advisor: Prof. Zachariah Fuchs

2014–2015 **Georgia Institute of Technology**

Masters in Aerospace Engineering

GPA: 4.0 · School: Engineering
Special Project: *Machine Learning Applications in Complex Control Systems*
Description: The iterative linear quadratic Gaussian algorithm was re-derived, and the application of Gaussian Process Regression Networks to the algorithm was explored.
Advisor: Assoc. Prof. Evangelos Theodorou

2008–2012 **The Ohio State University**

Bachelors in Aero/Astro Engineering

GPA: 3.97 · *Minor: Computer Science* · School: Engineering

Journal Articles

Garcia, Eloy, David W Casbeer, et al. "Multiple Pursuer Multiple Evader Differential Games". In: *Transactions on Automatic Control* (May 1, 2020). Submitted for Review.

Milutinović, Dejan et al. "Deterministic Saddle Point Strategy Resolution of the Dilemma in the Wall Pursuit Game". In: *Transactions on Automatic Control* (May 31, 2020). Submitted for Review.

Pachter, Meir et al. "Cooperative Pursuit by Multiple Pursuers of a Single Evader". In: *Journal of Aerospace Information Systems* (Feb. 1, 2020). DOI: 10.2514/1.I010739. URL: https://avonmoll.github.io/files/ManyPursuers.pdf.

Salmon, John L. et al. "Single Pursuer Multiple-Cooperative Evaders in the Border Defense Differential Game". In: *Journal of Aerospace Information Systems* (Mar. 19, 2020). DOI: 10.2514/1.I010766.

Von Moll, Alexander, Eloy Garcia, et al. "Multiple Pursuer Single Evader Border Defense Differential Game". In: *Journal of Aerospace Information Systems* (Feb. 1, 2020). DOI: 10.2514/1.I010740. URL: https://avonmoll.github.io/files/mp1e-border.pdf.

Pachter, Meir et al. "Two-on-One Pursuit". In: *Journal of Guidance, Control, and Dynamics* 42.7 (July 8, 2019). DOI: 10.2514/1.G004068. URL: https://avonmoll.github.io/files/TwoCutters.pdf.

Von Moll, Alexander, David Casbeer, et al. "The Multi-Pursuer Single-Evader Game: A Geometric Approach". In: *Journal of Intelligent and Robotic Systems* 96 (2 Jan. 2, 2019), pp. 193–207. DOI: 10.1007/s10846-018-0963-9. URL: https://avonmoll.github.io/files/mp1e-journal.pdf.

Von Moll, Alexander, Meir Pachter, Eloy Garcia, et al. "Robust Policies for a Multiple Pursuer Single Evader Differential Game". In: *Dynamic Games and Applications* (10 May 4, 2019), pp. 202–221. DOI: 10.1007/s13235-019-00313-3. URL: https://avonmoll.github.io/files/mp1e-robust.pdf.

Conference Papers

Garcia, Eloy, David W. Casbeer, et al. "Pride of Lions and Man Differential Game". In: *Conference on Decision and Control*. Submitted for Review. Jeju Island, South Korea, Dec. 8, 2020.

Von Moll, Alexander, Pavlos Androulakakis, et al. "Evolutionary Design of Cooperative Predation Strategies". In: *Conference on Games*. Accepted. Osaka, Japan: IEEE, Aug. 24, 2020.

Von Moll, Alexander and Zachariah Fuchs. "Attacker Dispersal Surface in the Turret Defense Differential Game". In: *IFAC World Congress on Automatic Control*. Accepted. Berlin, Germany, July 31, 2020.

— "Optimal Constrained Retreat within the Turret Defense Differential Game". In: *Conference on Control Technology and Applications*. Accepted. Montreal, Canada, Aug. 24, 2020.

Von Moll, Alexander, Zachariah Fuchs, and Meir Pachter. "Optimal Evasion Against Dual Pure Pursuit". In: *American Control Conference*. Accepted. Denver, CO: IEEE, July 5, 2020.

Von Moll, Alexander, Meir Pachter, Daigo Shishika, et al. "Guarding a Circular Target By Patrolling its Perimeter". In: *Conference on Decision and Control*. Submitted for Review. Jeju Island, South Korea: IEEE, Dec. 11, 2020.

Weintraub, Isaac E. et al. "Maximum Observation of a Faster Non-Maneuvering Target by a Slower Observer". In: *American Control Conference*. Accepted. Denver, CO, July 5, 2020.

Garcia, Eloy, David W. Casbeer, et al. "Cooperative Two-Pursuer One-Evader Blocking Differential Game". In: July 10, 2019. DOI: 10.23919/ACC.2019.8814294.

Garcia, Eloy, Alexander Von Moll, et al. "Strategies for Defending a Coastline Against Multiple Attackers". In: *IEEE Conference on Decision and Control*. Nice, France, Dec. 31, 2019. DOI: 10.1109/CDC40024.2019.9029340.

Manyam Satyanarayana, G. et al. "Optimal Dubins Paths to Intercept a Moving Target on a Circle". In: July 10, 2019. DOI: 10.23919/ACC.2019.8814913.

Manyam, Satyanarayana Gupta et al. "Shortest Dubins Path to a Circle". In: *AIAA SciTech*. San Diego, CA: AIAA, Jan. 7, 2019. DOI: 10.2514/6.2019-0919. URL: http://arxiv.org/abs/1804.07238.

Manyam, Satyanarayana G. et al. "Coordinating Defender Path Planning for Optimal Target-Attacker-Defender Game". In: *AIAA Infotech*. San Diego, CA: AIAA, Jan. 11, 2019. DOI: 10.2514/6.2019-0388.

Pachter, Meir et al. "Singular Trajectories in the Two Pursuer One Evader Differential Game". In: *2019 International Conference on Unmanned Aircraft Systems*. Atlanta, GA, June 15, 2019. DOI: 10.1109/ICUAS.2019.8798244. URL: https://avonmoll.github.io/files/2p1e-singular.pdf.

Von Moll, Alexander, Eloy Garcia, et al. "Multiple Pursuer Single Evader Border Defense Differential Game". In: *AIAA SciTech*. San Diego, CA: AIAA, Jan. 11, 2019. DOI: 10.2514/6.2019-1162. URL: https://avonmoll.github.io/files/mp1e-border.pdf.

Black, Richard J. et al. "Integrated Fiber-Optic Sensor Network System Reliability Modeling and Analysis for Aerospace Applications". In: *2018 AIAA Information Systems-AIAA Infotech @ Aerospace*. AIAA SciTech Forum. American Institute of Aeronautics and Astronautics, Jan. 7, 2018. DOI: 10.2514/6.2018-0714. URL: http://arc.aiaa.org/doi/10.2514/6.2018-0714.

Kalyanam, Krishna et al. “Scalable and Exact MILP Methods for UAV Persistent Visitation Problem”. In: IEEE, Aug. 1, 2018, pp. 337–342. DOI: 10.1109/CCTA.2018.8511587. URL: https://sites.google.com/site/krishnakalyanam/ccta2018.pdf.

Moslehi, Behzad et al. “High-Bandwidth Fiber-Optic Pressure Sensors for High-Temperature Aerospace Applications”. In: *2018 AIAA Information Systems-AIAA Infotech @ Aerospace*. AIAA SciTech Forum. American Institute of Aeronautics and Astronautics, Jan. 7, 2018. DOI: 10.2514/6.2018-0715. URL: http://arc.aiaa.org/doi/10.2514/6.2018-0715.

Von Moll, Alexander, David W. Casbeer, et al. “Pursuit-evasion of an Evader by Multiple Pursuers”. In: *2018 International Conference on Unmanned Aircraft Systems (ICUAS)*. Dallas, TX: IEEE, June 1, 2018, pp. 133–142. DOI: 10.1109/ICUAS.2018.8453470. URL: https://avonmoll.github.io/files/mp1e.pdf.

Von Moll, Alexander, Krishna Kalyanam, et al. “Genetic Algorithm Approach for UAV Persistent Visitation Problem”. In: Atlanta, GA: ASME, Oct. 1, 2018. DOI: 10.1115/DSCC2018-8950. URL: https://drive.google.com/file/d/0B0yHktr7udqgZERlUHRfaXNjOWQ5ZWJwNi05bDBvOVYtbDBV/view?usp=sharing.

Behbahani, Alireza R. et al. “Aircraft Integration Challenges and Opportunities for Distributed Intelligent Control, Power, Thermal Management, Diagnostic and Prognostic Systems”. In: *2014 SAE Aerospace Systems and Technology Conference*. SAE International, Sept. 1, 2014. DOI: 10.4271/2014-01-2161.

Von Moll, Alexander, Alireza R. Behbahani, et al. “A Review of Exhaust Gas Temperature Sensing Techniques for Modern Turbine Engine Controls”. In: *50th AIAA/ASME/SAE/ASEE Joint Propulsion Conference*. AIAA Propulsion and Energy Forum. American Institute of Aeronautics and Astronautics, July 25, 2014. DOI: 10.2514/6.2014-3977. URL: http://arc.aiaa.org/doi/10.2514/6.2014-3977.

Von Moll, Alexander, Ken Semega, et al. “Recent Progress, Challenges, and Future Development Needs of Thermally/Energy Efficient Fuel Actuator Pumping Systems for Military Gas Turbine Engine Applications”. In: *JANNAF Interagency Propulsion Committee 34th Airbreathing Propulsion*. JANNAF Interagency Propulsion Committee, Jan. 1, 2014.

Von Moll, Alexander and Alireza R. Behbahani. “Comparison of Communication Architectures and Network Topologies for Distributed Propulsion Controls”. In: *59th IIS 2013*. ISA, Jan. 1, 2013. URL: http://www.dtic.mil/dtic/tr/fulltext/u2/a586909.pdf.

OTHER INFORMATION

Awards

2019 · Aerospace Control & Guidance Systems Committee Dave Ward Memorial Lecture Award

2014 · DoD SMART Scholarship

2011 · DoD SMART Scholarship

May 8, 2020