Zouhair Mahboubi

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Summary

Accomplished technical, business, and people's leader with proven expertise in:

- Business planning and go-to-market strategy, product management, partnerships, and operations
- Optimization, Simulation, Estimation, Control Theory
- Reinforcement Learning, Data Science and Data Visualization
- Extensive programming experience with Python, C/C++ , and Matlab/Simulink

Work Experience

Kitty Hawk - Cora (Mountain View, California) **June 2016 - December 2018**

Head of Product

- Responsible for setting the product vision and technical requirements
- Advised Executive team on business plans and go-to-market strategies
- Setup operations in new country (export control compliance, equipment shipment, new business licenses, etc.)
- Interfaced and led negotiations with aviation regulatory agencies and key business partners

Kitty Hawk - Zee.Aero (Mountain View, California) **June 2010 - 2016**

Aerospace Engineer & Team Lead

as Guidance Navigation & Controls Engineer (2012 - 2016)

- Developed and patented non-linear control allocation scheme for over-actuated electric VTOL aircraft
- Identified linearized model shortcomings and improved non-linear simulation
- Implemented MIMO stability margins and uncertainty analysis for robust stability and performance
- Participated in windtunnel and flight-test operations at NASA facilities
- Setup, designed and conducted experiments for handling qualities evaluation in pilot simulation

as Software & Avionics team lead (2010 - 2012)

- Interviewed, hired, and managed founding software and avionics team
- Designed avionics architecture, autopilot software, and Ground Control Station for unmanned vehicle
- Designed and implemented flight state machine and health monitoring system

NASA Ames Research Center (Moffet Field, California) **Sept. 2009 - May 2010**

Research Assistant

- Performed aerodynamics and stability analysis of a foot-launched hang-glider being converted to an electric UAV and contributed to the design of the avionics architecture (*Intelligent Systems Division*)
- Implemented weight, power, communication, and trajectory modules for rapid analysis and design of conceptual satellite missions (*Mission Design Center*)

Education

Stanford University, California, USA

Ph.D. Aeronautics and Astronautics (CGPA: 4.00/4.00) **2012 - 2016**

Thesis: *Automated Air-Traffic Control for Non-Towered Airports*

· Modeled behavior of aircraft in the airport pattern as a hidden Markov Model (HMM)
· Used Bayesian Inference to learn HMM parameters from real-world radar observations (20GB)
· Modeled collision advisories as partially observable semi-Markov decision process (POSMDP)
· Used Reinforcement Learning techniques to obtain optimal advisories

M.Sc. Aeronautics and Astronautics (CGPA: 4.00/4.00) **2008 - 2010**

Selected Projects:

· Set world altitude record for 'autonomous electrical UAV under 5kg'
· Collaborated on camera-based localization for autonomous UAVs flying in formation flight

McGill University, Montreal, Canada

B.Eng Mechanical Engineering with Minor in Computer Science (CGPA: 3.99/4.00) **2004 - 2008**

Honours Thesis: *Viscous Drag Minimization via Control Theory at Low Mach Numbers*

Publications, Patents, and Awards

Wrote 5 publications and applied for 1 patent including:

- Z. Mahboubi and M. J. Kochenderfer, "Learning Traffic Patterns at Small Airports from Flight Tracks", in *Journal of Intelligent Transportation Systems*, April 2017.
- Z. Mahboubi and colleagues, "Online Optimization Based Flight Control System". *U.S. Patent Application 15297029*, filed October 2016.
- Z. Mahboubi, Z. Kolter, T. Wang, G. Bower, and A. Y. Ng, "Camera Based Localization for Autonomous UAV Formation Flight", in *AIAA@ Infotech Conference*, 2011. [Best student paper award].

Received 10 awards and scholarships including:

- NSERC CGS M and FQRNT A8 scholarships for Doctoral studies in Aeronautics
- Nicholas J. Hoff Award for Outstanding Master's Degree Student
- British Association Medal & Dean's Honour list for Bacherlor studies