Alex Wassenberg

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Education

University of Colorado Boulder — Boulder, CO
Masters of Science in Aerospace Engineering — May 2016

Massachusetts Institute of Technology — Cambridge, MA
Bachelor of Science in Aerospace Engineering with a minor in Architecture — June 2014

Academic Projects

NASA/Orbital ATK Long Duration Spaceflight Habitat Design Team, *Structures and Human Factors Engineer* 08/2015 – 12/2015
Development of long-duration space habitat utilizing Orbital ATK Cygnus cargo module

- Designed and structurally analyzed Cygnus module mock up in SolidWorks
- Constructed Cygnus module mock up shell to be used for subsystem form and fit evaluations and human factors testing

NASA eXploration Habitat (X-Hab) Academic Innovation Team, *ECLSS, Structures, and Electrical Engineer* 08/2014 – 06/2015
Prototype Martian greenhouse development for growing plants in an unmanned, controlled environment

- Designed and carried out hardware integration for closed atmospheric regulation system including CO_2 provision, O_2 separation and removal, trace contaminant control, humidity control, and ventilation. Defined requirements, developed mass/power/volume budgets, wrote and implemented test plants, and developed interface control documents
- Designed greenhouse structure in SolidWorks and constructed to house subsystem components and serve as a pressure vessel
- Modeled system PCB in Altium. Assembled and integrated PCB for autonomous monitoring and control of greenhouse components. Assembled and integrated sensors and carried out system wiring

CU Boulder Life Support System Humidity Control Team, *Testing Lead* 03/2015 – 05/2015

- Led testing to characterize humidity removal performance of regenerable silica gel desiccant bed to determine optimal desorption temperature for implementation in spacecraft Environmental Control and Life Support Systems

MIT Space Systems Lab, *Thermal Imaging Camera Subsystem Lead and Software Engineer* 02/2014 – 07/2014
SPHERES microsatellite sensor integration to demonstrate on-orbit spacecraft inspection capability

- Defined requirements and wrote test plans/reports for thermal imaging camera integration
- Developed image capture/storage software in C++ and carried out thermal imaging camera hardware and software testing/integration

MIT Space Systems Engineering, *Systems and Attitude Determination and Control System Engineer* 02/2013 – 05/2013
CubeSat development for on-orbit performance testing of MEMS deformable mirror imaging technology

- Led subsystem integration for a team of 14. Defined requirements and developed risk assessments
- Designed ADCS to ensure necessary ground station communication, detection of external light sources, and stability

Research Experience

NASA Langley Research Center 01/2016 – 05/2016
Space habitat medical workstation development for Mars transfer habitat

- Designed the interior volume and layout of a space habitat medical workstation in PTC Creo that will enable nominal through advanced life support medical care of astronauts on long-duration space missions

Lockheed Martin/MIT Space Propulsion Lab 06/2013 – 08/2014
Fabrication of porous alumina ceramic electrodes for ion electrospray propulsion systems

- Used novel sol-gel process to achieve highly uniform and tailorable electrodes that produce current outputs two orders of magnitude greater than those made from leading materials with reduced production cost and time

MIT Strategic Engineering Research Group 08/2013 – 12/2013

- Developed dynamic model via Simulink 3D Animation tool to visualize decomposition of spacesuit consumables

Lockheed Martin Information Systems & Global Solutions (IS&GS), *Technical Intern* 06/2011 – 08/2011

Publications

Darnell A., Azad A., Borlaug B., Case D., Chamberlain C., Fortier K., Guerrie P., Jethani H., Marino J., Soma C., Srivastava A., Wassenberg A., Holquist J., Nabity J., "MarsOASIS: A predeployable miniature Martian greenhouse for crop production research" 45th International Conference on Environmental Systems, ICES-2015-224

Awards

MIT Apollo Award 05/2014

Additional Skills

MATLAB, STK, Python, Java, Rhinoceros, Processing