

MAN-VEHICLE LABORATORY/HUMAN SYSTEMS  
LABORATORY

**THESES**

June 2021

MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
37-219  
Cambridge, Massachusetts 02139

## 1962

Howland, H.R., **An Angular Head-Position Indicator**, S.B. in Electrical Engineering, June 1962.

Young, L.R., **A Sampled Data Model for Eye Tracking Movements**, Sc.D. in Aeronautics and Astronautics, June 1962.

## 1963

Oster, R.J., **An Analysis and Comparison of Two Principles Used in Wrist Watches**, S.M. in Aeronautics and Astronautics, November 1963.

## 1964

Duke, C.M. Jr. and Jones, M.S., **Human Performance During a Simulated Apollo Mid-Course Navigation Sighting**, S.M. in Aeronautics and Astronautics, June 1964.

Kilpatrick, P.S., **Comparison of Relay and Manual Controllers for Systems with High Order Dynamics**, S.B. in Aeronautics and Astronautics, May 1964.

Schulte, R.J. and Vreeland, R.E., **The Design and Construction of an Acceleration Cart**, S.M. in Aeronautics and Astronautics, June 1964.

## 1965

Johnson, I.S.C., Jr., **Human Optical Tracking of Stroboscopic Beacon for Orbital Rendezvous**, S.M. in Aeronautics and Astronautics, September 1965.

Kilpatrick, P.S., **Bending Mode Acceleration Influence on Pilot Control of Flexible Booster Dynamics**, S.M. in Aeronautics and Astronautics, September 1965.

Maimon, S.R., **Mathematical Modelling of the Aortic Pressure-Receptor System for Gross Outputs**, S.M. in Aeronautics and Astronautics, June 1965.

Meiry, J.L., **The Vestibular System and Human Dynamic Space Orientation**, Sc.D. in Aeronautics and Astronautics, June 1965.

Vuorikari, V.O., **Human Role in the Control Loop of the Automatic Landing Aircraft**, S.M. in Aeronautics and Astronautics, June 1965.

## 1966

Benjamin, P., **Visual and Motion Cues in Helicopter Flight**, S.M. in Aeronautics and Astronautics, January 1966.

## 1967

Chien, T-T., **Human Learning Behavior in Manual Control Tasks**, S.M. in Aeronautics and Astronautics, September 1967.

Friedman, G.R., **Helicopter Control: A Multi-Loop Manual Control System**, S.B. and S.M. in Aeronautics and Astronautics, June 1967.

Katz, G.R., **Perception of Rotation Nystagmus and Subjective Response at Low Frequency Stimulation**, S.M. in Aeronautics and Astronautics, September 1967.

Nashner, L.M., **A Rate Gyro Autopilot for a Motorbike**, S.M. in Aeronautics and Astronautics, January 1967.

Nozawa, Y., **Optimal Pre-Launch Test Duration for a Space System**, Sc.D. in Aeronautics and Astronautics, October 1967.

Preyss, A.E., **A Theory and Model of Human Learning Behavior in a Manual Control Task**, Sc.D. in Aeronautics and Astronautics, February 1967.

Steer, R.W., **The Influence of Angular and Linear Acceleration and Thermal Stimulation on the Human Semicircular Canal**, Sc.D. in Aeronautics and Astronautics, August 1967.

Yasui, S., **The Use of the Chatter Mode in Self-Adaptive Systems**, S.M. in Aeronautics and Astronautics, September 1967.

## 1968

Allum, J.H.J., **Neural Pre-Processing in the Visual System - An Hypothesis**, S.M. in Mechanical Engineering, May 1968.

Curry, R.E., **Estimation and Control with Quantized Measurements**, Ph.D. in Aeronautics and Astronautics, May 1968.

Dinsdale, P.B., **Relative Effects of Roll and Yaw Motion Cues in Manual Control**, S.M. in Aeronautics and Astronautics, September 1968.

Forster, J.D., **A Stochastic Revised Sampled Data Model for Eye Tracking Movements**, S.M. in Aeronautics and Astronautics, June 1968.

Oman, C.M., **Influence of Adaptation on the Human Semicircular Canals and the Role of the Subjective Angular Velocity Cues in Spatial Orientation**, S.M. in Aeronautics and Astronautics, September 1968.

Shirley, R.S., **Motion Cues in Man Vehicle Control**, Sc.D. in Aeronautics and Astronautics, January 1968.

Vircks, R.M., **Investigation of Head Movements and Intensity as Depth Cues in a Perspective Contact Analog Display**, S.M. in Aeronautics and Astronautics, September 1968.

## 1969

Kemp, G.G., **AVTOL Prediction Display**, S.M. in Aeronautics and Astronautics, September 1969

Noggle, P.L., **Manual Control of Unstable Vehicles Using Kinesthetic Cues**, S.M. in Aeronautics and Astronautics, March 1969.

Sheena, D., **A System for Instantaneous Wide Angle Eye Position Measurement**, Ph.D. in Electrical Engineering, June 1969.

## 1970

Nashner, L.M., **Sensory Feedback in Human Posture Control**, Sc.D. in Aeronautics and Astronautics, June 1970.

Smith, T.B. III, **Determination of the Optimum Resolution Element for a Pilot Warning Indicator**, S.M. in Aeronautics and Astronautics, June 1970.

Tole, J.R., **Galvanic Stimulation and the Perception of Rotation**, S.M. in Aeronautics and Astronautics, June 1970.

Van Houtte, N.A.J., **Display Instrumentation for V/STOL Aircraft in Landing**, Sc.D. in Aeronautics and Astronautics, June 1970.

Von Renner, L.C., **Extravehicular Attitude Control by Use of Head Motions**, S.M. in Aeronautics and Astronautics, June 1970.

## 1971

Anderson, R.E., **Format Evaluation for an Airborne Air Traffic Situation Display**, S.M. in Aeronautics and Astronautics, June 1971.

Beard, R.V., **Failure Accommodation in Linear Systems through Self-Reorganization**, Ph.D. in Aeronautics and Astronautics, February 1971.

Mirchandani, P.B., **Evaluation of a Supplementary Auditory Display in a Dual Axis Compensatory Task**, S.M. in Aeronautics and Astronautics, September 1971.

## 1972

Basile, P.S., **A Design Procedure Utilizing Crossfeeds for Coupled Multiloop Systems**, S.M. in Aeronautics and Astronautics, May 1972.

Chouet, B.A., **An Electro-Optical Attitude Control System for Astronaut Space Activities**, S.M. in Aeronautics and Astronautics, June 1972.

Ephrath, A.R., **Automatic Temperature Regulation in Portable Life Support Systems**, S.M. in Aeronautics and Astronautics, January 1972.

Murphy, R.E., **A Display System to Induce Self Rotation**, S.M. in Aeronautics and Astronautics, June 1972.

Oman, C.M., **Dynamic Response of the Semicircular Canal and Lateral Line Organs**, Ph.D. in Aeronautics and Astronautics, June 1972.

## 1973

Burr, C.R., **The Effects of Galvanic Vestibular Stimulation and Neck Rotation on the Ankle Stretch Reflex**, S.M. in Aeronautics and Astronautics, February 1973.

## 1974

Allum, J.H.J., **The Dynamic Response of the Human Neuromuscular System for Internal-External Rotation of the Humerus**, Sc.D. in Aeronautics and Astronautics, August 1974.

Ormsby, C.C., **Model of Human Dynamic Orientation**, Ph.D. in Aeronautics and Astronautics, January 1974

Perkell, J.S., **A Physiologically-Oriented Model of Tongue Activity in Speech Production**, Ph.D. in Electrical Engineering, September 1974.

Tang, J.T.Y., **Interaction between Visually Induced and Real Lateral Tilts**, S.M. in Aeronautics and Astronautics, February 1974.

Yasui, S. **Nystagmus Generation, Oculomotor Tracking and Visual Motion Perception**, Ph.D. in Aeronautics and Astronautics, February 1974.

## 1975

Ephrath, A.R., **Pilot Performance in Zero-Visibility Precision Approach**, Ph.D. in Aeronautics and Astronautics, June 1975.

Gai, E.G., **Psychophysical Models for Signal Detection with Time-Varying Uncertainty**, Ph.D. in Aeronautics and Astronautics, January 1975.

Jernigan, M.E., **Eye Movement Analysis in Plotting the Visual Field**, Ph.D. in Electrical Engineering, June 1975.

## 1976

Borah, J.D., **Human Dynamic Orientation Model Applied to Motion Simulation**, S.M. in Aeronautics and Astronautics, May 1976.

Chao, A., **Quantitative Clinical Measurement of Spasticity**, S.M. in Aeronautics and Astronautics, February 1976.

Chu, W.H.N., **Dynamic Response of Human Linearvection**, S.M. in Aeronautics and Astronautics, February 1976.

Lipson, M.A., **Determination of Null Point in the Response of the Vestibular System to Air Caloric Stimulation**, S.B. in Mechanical Engineering, June 1976.

Tole, J.R., **A Quantitative Study of Diagnostic Techniques for Peripheral Vestibular Disorders**, Sc.D. in Aeronautics and Astronautics, January 1976.

Vidic, T.R., **Clinical Test for Abnormal Human Response to Vertical Acceleration**, S.B. in Electrical Engineering, May 1976.

## 1977

Barak, E., **A Device for Objective Measurement of Spasticity**, S.M. in Aeronautics and Astronautics, September 1977.

Burch, C.A., **Microprocessor-Controlled Eye Movement Monitor for Clinical Applications**, S.B. in Electrical Engineering and Computer Science, May 1977.

Govindaraj, T., **Detection by Human Observers**, S.M. in Aeronautics and Astronautics, January 1977.

Michaels, D.L., **Microprocessor Analysis of Eye Movements**, S.M. in Electrical Engineering and Computer Science, January 1977.

Riedel, S.A., **A Comparison of Washout Filters Using A Human Dynamic Orientation Model**, S.M. in Aeronautics and Astronautics, September 1977.

Zacharias, G.L., **Motion Sensation Dependence on Visual and Vestibular Cues**, Ph.D. in Instrumentation, September 1977.

## 1978

Acree, C.W., **Pilot Estimates of Glide Path and Aim Point During Simulated Landing Approaches**, S.M. in Aeronautics and Astronautics, September 1978.

Edelman, E.R., **Detection and Tracking of Eye Movements Using a Video Scanner**, S.B. in Electrical Engineering and Computer Science, May 1978.

Gould, J.M., **Posture Platform to Microprocessor Interface for Acquisition of Vestibular Stability Data**, S.B. in Electrical Engineering and Computer Science, September 1978.

## 1979

Edelman, E.R., **Video Based Monitoring of Torsional Eye Movements**, S.M. in Electrical Engineering and Computer Science, June 1979.

Huang, J.K., **Visual Field Influence on Motion Sensation in Yaw and on Manual Roll Stabilization**, S.M. in Aeronautics and Astronautics, June 1979.

Lichtenberg, B.K., **Ocular Counterrolling Induced in Humans by Horizontal Accelerations**, Sc.D. in Biomedical Engineering, June 1979.

Melsky, G.S., **The Design of a Device to Test the Dynamic Performance of Ski Bindings**, S.B. in Mechanical Engineering, May 1979.

Mena, D., **A Kinematic Model of the Human Swing Leg for Clinical Applications**, S.M. in Aeronautics and Astronautics, September 1979.

## 1980

Crites, T.A., **Circularvection and Ocular Counterrolling in Visually Induced Roll Supine and in Weightlessness**, S.M. in Aeronautics and Astronautics, May 1980.

Loo, D.K., **A Hybrid Controller for a Rail Mounted Sled**, S.M. in Aeronautics and Astronautics, May 1980.

Wicke, R.W., **Human Visual-Vestibular Interactions During Postural Responses to Brief Falls**, Ph.D. in Electrical Engineering, July 1980.

## 1982

Arrott, A.P., **Torsional Eye Movements in Man During Linear Accelerations**, S.M. in Aeronautics and Astronautics, May 1982.

Ish-Shalom, J.I.H., **Design of Optimal Motion for Flight Simulators**, Ph.D. in Biomedical Engineering, December 1982.

Israel, David Alan, **Posture Control in Adolescent Idiopathic Scoliosis**, SM, AeroAstro, February 1982

McQuain, M.T., **Visually Induced Self-Motion: Experiments in Space**, S.B. in Electrical Engineering and Computer Science, May 1982.

Medina-Puerta, A., **Visual Information Processing in Various Degrees of Alertness**, S.M. in Electrical Engineering and Computer Science, October 1982.

### 1983

Hiltner, D.W., **A Closed-Loop Otolith Assessment Procedure**, S.M. in Aeronautics and Astronautics, January 1983.

Huang, J.K., **Visual and Motion Cues in Lateral and Pitch Simulator Stabilization**, Ph.D. in Aeronautics and Astronautics, February 1983.

Kitchen, B.J., **Horizontal and Vertical Eye Deviations in Response to Linear Accelerations**, S.B. in Electrical Engineering and Computer Science, May 1983.

Massoumnia, M-A., **Detection of Fast Phase of Nystagmus Using Digital Filtering**, S.M. in Aeronautics and Astronautics, May 1983.

Parker, J.A., **Measurement of Torsion from Multi-Temporal Images of the Eye Using Digital Signal Processing Techniques**, Ph. D. in Biomedical Engineering, May 1983.

Wilson, F.R., **Development of a New Test Method for Nordic and Combined Nordic/Alpine Ski Bindings**, S.B. in Mechanical Engineering, May 1983.

### 1984

Palmer, D.E., **Linear Motion Perception**, S.B. in Biology and Physics, June 1984

### 1985

Arrott, A.P., **Ocular Torsion and Gravitoinertial Force**, Ph.D. in Biomedical Engineering, May 1985.

Haas, B.N., **Angular Motion Perception in Roll**, S.B. in Mechanical Engineering, June 1985.

Malan, A.R., **Characteristics of Optokinetic Torsion in Upright and Supine Orientations**, S.M. in Aeronautics and Astronautics, June 1985.

McCoy, R.K., **The Study of Human Head Movement on Spacelab-1**, S.M. in Mechanical Engineering, February 1985.

Nagashima, Y., **Digital Signal Processing Techniques for the Measurement of Ocular Counterrolling**, S.M. in Aeronautics and Astronautics, May 1985.

Sullivan, R.B., **The Use of Vestibular Models in Flight Simulator Motion Washout Systems: An Experimental Evaluation**, S.M. in Aeronautics and Astronautics, May 1985.

## 1986

Adkins, S.P., **Performance Effects of Display and Control Augmentation on a Simulated Manual Orbital Docking Task**, S.M. in Aeronautics and Astronautics, June 1986.

Fordyce, J.E., **An Experimental Protocol for the Evaluation of Graphic Input Devices in Microgravity**, S.M. in Aeronautics and Astronautics, June 1986.

Kneller, E.W., **The Effect of Field of View on the Manual Control of Visually-Simulated Aircraft Roll**, S.M. in Aeronautics and Astronautics, June 1986.

Madhavan, A., **An Investigation of Human Linear Motion Perception**, S.B. in Electrical Engineering, September 1986.

Misovec, K.M., **The Effect of Flight Simulator Motion on Modelled Vestibular Response**, S.M. in Aeronautics and Astronautics, August 1986.

Kulbaski, J.K., **Effects of Weightlessness on the Vestibulo-Ocular Reflex in the Crew of Spacelab1**, S.B. in Mechanical Engineering, June 1986.

## 1987

Rague, B.W., **Analysis of Abdominal Slow Potentials During Motion Sickness**, S.M. in Aeronautics and Astronautics, May 1987.

## 1988

Diamandis, P.H., **The Artificial Gravity Sleeper: A Deconditioning Countermeasure for Long Duration Space Habitation**, S.M. in Aeronautics and Astronautics, February, 1988.

Eagon, J.C., **Quantitative Frequency Analysis of the Electrogastragram During Prolonged Motion Sickness**, M.D., April 1988.

An, B., **Human Perception and Indication of the Vertical: Experiments and Models**, S.M. in Aeronautics and Astronautics, August 1988.

## 1989

Newman, D.J., **Human Mental Workload & Performance in Space: Engineering Development and Policy Aspects**, S.M. in Aeronautics and Astronautics and S.M. in Technology and Policy, February 1989.

McDade, T.P., **An Investigation of Adjustable Microgravity Workstation Anthropometrics Through Analyses of Neutral Body Posture and Lower Leg Muscular Fatigue Characteristics**, S.M. in Aeronautics and Astronautics, February, 1989.

Alston, A.E., **An Integrated System for Tracking of Landmarks on Video Data: TOMAS The Torsional Ocular Movement Analysis System**, S.M. in Operations Research, June 1989.

Chandra, D., **An Evaluation of Automation for Flight Path Management in Transport Category Aircraft**, S.M. in Aeronautics and Astronautics, August 1989.



Shubentsov, I., **Relationship between Astronaut Head Motion and Space Motion Sickness on Spacelabs 1 and D1**, S.M. in Aeronautics and Astronautics, August 1989.

## 1990

Merfeld, D.M., **Spatial Orientation in the Squirrel Monkey: An Experimental and Theoretical Investigation**, Ph.D. in Biomedical Engineering, January, 1990.

Shelhamer, M., **Linear Acceleration and Horizontal Eye Movements in Man**, Sc.D. in Biomedical Engineering, January, 1990.

Blanford, C.L., **Frequency Analysis and Diagnostic Classification of Changes in the Human Electrogastragram During Motion Sickness**, S.M. in Electrical Engineering and Computer Science, June 1990.

Mullen, T.J., **Transfer Function Analysis of Autonomic Activity During Motion Sickness**, S.M. in Electrical Engineering, June 1990.

Standish, G.J., **Influence of Generalized Tactile Cues on Motion Sensation and Postural Control**, S.M. in Aeronautics and Astronautics, June 1990.

Tse, M.I., **Ocular Torsion During Linear Acceleration in Space**, S.B. in Mechanical Engineering, June 1990.

McGrath, B.J., **Human Vestibular Response During 3 Gz Centrifuge Stimulation**, S.M. in Aeronautics and Astronautics, September 1990.

## 1991

Lai, S-H., **CLIPSBASE: A Real-Time Relational Database For The "Principal Investigator-In-A-Box [PI] Expert System**, S.M. in Aeronautics and Astronautics, February, 1991.

Law, G. W., **Measurements of Ocular Counterrolling During Linear Accelerations Using an Electromagnetic Scleral Search Coil System**, S.M. in Aeronautics and Astronautics, August, 1991.

## 1992

Christie, J.R.I., **Modulation of Optokinetic Nystagmus in Humans by Linear Acceleration, and the Effects of Spaceflight**, S.M. in Aeronautics and Astronautics, February 1992

Jackson, D.K., **Characterization of the Torsional Optokinetic Response to Rolling Visual Fields in Humans**, S.M. in Aeronautics and Astronautics, February 1992

Balkwill, M.D., **Changes in Human Horizontal Angular VOR After the Spacelab SLS-1 Mission**, S.M. in Aeronautics and Astronautics, February 1992

Newman, D.J., **Human Locomotion and Energetics in Simulated Partial Gravity**, Ph.D. in Aerospace Biomedical Engineering, June 1992

Groleau, N., **Model-Based Scientific Discovery: A Study in Space Bioengineering**, Ph.D. in Intelligent Engineering Systems, September 1992

## 1993

Bilien, V., **Modeling Human Spatial Orientation Perception in a Centrifuge Using Estimation Theory**, S.M. in Aeronautics and Astronautics, February 1993

Davis, G.H., **A Study of the Human Linear Vestibular Ocular Reflex During Nasooccipital Acceleration**, B.S. in Electrical Engineering and Computer Science, May 1993.

Liefeld, J.T., **Changes in Human Horizontal Angular VOR After the Spacelab SL-1 Mission**, S. M. in Aeronautics and Astronautics, May, 1993.

Mendoza, J.C., **Investigation of Optokinetic Nystagmus and the Linear Vestibular-Ocular Reflex**, S. M. in Aeronautics and Astronautics, June, 1993.

Polutchko, K.A., **Using Eye Movements to Quantify Human Sensation of Linear Translation: A Potential Test of Changes Induced by Adaptation to Spaceflight**, S. M. in Aeronautics and Astronautics, June, 1993.

Schivone, Tara, **"The Effect of Center of Mass Displacement on Energy Expenditure in Partial Gravity Environments"**, December 1993. SB

Stephenson, S.B., **Influence of the Visual Field on Manual Roll and Lateral Stabilization**, S. M. in Aeronautics and Astronautics, September, 1993.

Weigel, Annalisa, **"The Effect of Center of Mass Displacement on Energy Expenditure in Partial Gravity Environments"**, December 1993. SB

## 1994

Lathan, C., **Human Eye Movements in Response to Linear Optokinetic Stimulation and Whole-body Acceleration, and the Effects of Spaceflight**, Ph.D. in Neuroscience, September, 1994.

London, Adam, **"Microgravity Space Simulation in a 0-G Natatorium (MISSION)"**, December 1994, SB.

Smith, Robin, **"Microgravity Space Simulation in a 0-G Natatorium (MISSION)"**, December 1994

## 1995

de Souza, J., **A Virtual Environment System for Spatial Orientation Research**, M.S. in Electrical Engineering and Computer Science, May, 1995.

Jensen, Andrea, **"Mechanical Design of a Suspension Simulator"**, MIT Department of Mechanical Engineering, June 1995.

Pouliot, C., **Changes in the Horizontal Angular Vestibulo-ocular Reflex of SLS-2 Space Shuttle Astronauts due to Weightlessness**, M.S. in Aeronautics and Astronautics, February, 1995.

Schaffner, G., **Dynamic Analysis of Astronaut Motions During Extravehicular Activity**, M.S. in Aeronautics and Astronautics, June, 1995

Schultz, K., **Etiology of Perceived Strength Changes in the Muscles of the Legs Following Locomotion under Simulated Low Gravity**, M.S. in Aeronautics and Astronautics, June, 1995.

Lathan, C., **Sensorimotor Adaptation of Human Control Strategies: Ramifications for Future Human-Machine Interface Design**, M.S. in Aeronautics and Astronautics, September 1995.

## 1996

Sinha, Prashant, **The SLS-2 Mission: Effects of Spaceflight on Static Ocular Counterrolling**, M.E. in Electrical Engineering and Computer Science, June, 1996.

Markmiller, Michael, **Sensory Interactions in Human Perception of Motion**, M.S. in Mechanical Engineering, September, 1996.

Skwsky, Adam, **Effect of Scene Polarity and Head Orientation on Roll Illusions in a Virtual Environment**, M.S. in Mechanical Engineering, September, 1996.

Pabmanabhan, Srikrishna, **Preventive Stepping in Quiet Standing: Effect of Vestibulopathy**, Ph.D., Mechanical Engineering, June 1997.

## 1997

Neimark, Matthew A. **Microgravity Induced Changes in Horizontal Vestibulo-Ocular Reflexes of SLS-1 & SLS-2 Astronauts**, M.E. in Electrical Engineering, February 1997.

Smith, Robin Lee. **Fault Tree Analysis and Diagnostics Development for PI-in-a-Box with the Neurolab Sleep and Respiration Experiment**, M.S. in Aeronautics and Astronautics, June 1997.

Jackson, Dana Kessler "Keoki." **Development of Full-Body Models for Human Jump Landing Dynamic and Control**, S.D. in Aeronautics and Astronautics, June 1997.

Rasmussen, S.A.M. "Track angle error (TAE) displays and their effect on pilot performance during instrument approaches", S.M. in Aeronautics and Astronautics, June 1997.

## 1998

Schmidt, Patricia B. **The Effect of G-Seat Tactile Cueing on Linear Motion Perception** S.M. in Aeronautics and Astronautics, February 1998

Nghiem, David, **"A Smart Suit for Muscle Countermeasures in Microgravity," Boston University Dept. of Biomedical Engineering**, May 1998. SB

Callini, Gianluca. **Assessment of an Expert System for Space Life Sciences: a Preliminary GroundBased Evaluation of PI-in-a-Box for the Neurolab Sleep and Respiration Experiment**, S.M. in Aeronautics and Astronautics, September 1998.

Amir, Amir R., **"Design and Development of Advanced Load Sensors for the International Space Station,"** September 1998

Rochlis, Jennifer L. **A vibrotactile display for aiding extravehicular activity (EVA) navigation in space**, SM in Aeronautics and Astronautics.

Apori, Akwasi, **"Design of a Mechanical Pressure Spacesuit for use on Mars,"** June 1998. SB

Thibault, Karen, **"Astronaut Adaptive Arm Motions on the MIR Space Station: Kinematic Analysis,"** June 1998, SB

Allibhai, Taslim, "**Mechanical Pressure Suit Leg**," December 1998.

Carreno, M. Eric, "**Performance Testing of Racing Vehicles for Paraplegic Athletes**," December 1998

Carrillo, Jason, "**Performance Testing of Racing Vehicles for Paraplegic Athletes**," December 1998.  
SB

Oudonesom, Viengvilay, "**Mechanical Pressure Suit Leg**," December 1998, SB

## 1999

Tovee, Christine A. **Adaptation to a Linear Vection Stimulus in a Virtual Reality Environment**, S.M. in Aeronautics and Astronautics

Tryfonidis, Michail, "**Robust Adaptive Control Modeling of Human Arm Movements Subject to Altered Gravity and Mechanical Loads**," , PhD, June 1999.

Schaffner, Grant, "**Assessment of Hip Fracture Risk in Astronauts Exposed to Long-term Weightlessness**," Harvard-MIT HST, September 1999.

## 2000

Cheung, Carol C. **Regulator Control of a Short-Radius Centrifuge and Subjective Responses to Head Turns in a Rotating Environment**, S.M. in Aeronautics and Astronautics, June 2000.

Hutchison, Jr., William, E. **The Development of a Hybrid Virtual Reality/Video View-Morphing Display System for Teleoperation and Teleconferencing**, S.M. Program in System Design and Management, June 2000

Lyne, Lisette E. **Artificial Gravity: Evaluation of Adaptation to Head Using Subjective Measures**, S.M. Aeronautics and Astronautics, June 2000.

Sienko, Kathleen H. **Artificial Gravity: Adaptation of the Vestibulo-Ocular Response to Head Movements during Short-Radius Centrifugation**, S.M. Aeronautics and Astronautics, June 2000.

Richards, Jason T. **Three-Dimensional Spatial Learning in a Virtual Space Station Node**, S.M. Aeronautics and Astronautics, September 2000.

## 2001

Atamer, Allen, **Reliability Evaluation of an Expert System Diagnostic Aid for a Sleep and Respiration Experiment**, S.M., Aeronautics and Astronautics, February 2001.

Delaney, Melinda Gallo **Ground-Based Study of an Expert System for Human Assistance on the STS-95 Sleep and Respiration Experiment**. S.M., Aeronautics and Astronautics, February 2001.

Diez, Shana, "**Human-Powered Artificial Gravity**," June 2001, SB.

Forti, Dana, "**Human-Powered Artificial Gravity**," June 2001, SB

Jo, Sungho, **Application of a Model of Cerebellar Function to the Maintenance of Human Upright Posture**, S.M., Mechanical Engineering, June 2001.

Nolet, Simon, **Development of a Design Environment for Integrated Concurrent Engineering in Academia**," Master of Engineering, June 2001

Schmidt, Patricia, **An Investigation of Space Suit Mobility with Applications to EVA Operations**," ScD , September 2001

## 2002

Marquez, Jessica J. **"Spacecraft in Miniature": A Tool for the Acquisition of Mental Representations of Large, Complex 3-D Virtual Environments**, SM, Aeronautics and Astronautics, February 2002.

Saleh, Joseph, **"Weaving Time into System Architecture: New Perspectives on Flexibility, Spacecraft Design Lifetime, and On-Orbit Servicing**," February 2002.

Erika Brown, **"Artificial Gravity: The Role of Visual Inputs in Adaptation to Short-Radius Centrifugation**, SM, Aeronautics and Astronautics, June 2002.

Nathaniel J. Newby, **"Artificial Gravity: The Role of Graviceptive Information during Cross-Coupled Rotation in Context-Specific Adaptation**, SM Aeronautics and Astronautics, June 2002.

Berengere Houdou, **"Three-Dimensional Spatial Memory Training Using Virtual Reality: Effects of Reference Frame and Point-of-View"**, SM, Aeronautics and Astronautics, June 2002.

## 2003

Joaquin A. Blaya, **"Force-Controllable Ankle Foot Orthosis (AFO) to Assist Drip Foot Gait"**, SM, Mechanical Engineering, February 2003.

Ann L. Frazer, **"Modeling Human-Spacesuit Interactions"**, SM, AeroAstro, June 2003.

Bradley, Pitts, **"Spacesuits-Space Craft"**, Ph.D., AeroAstro, August 2003

## 2004

Sophie Adenot, **"Artificial Gravity: Changing the Intensity of Coriolis Cross-Coupled Stimulus with Head-Angle"**, SM, AeroAstro, August 2004

Garrick-Bethel, Ian **"Cross plane transfer of vestibular adaptation to human centrifugation"**, SM, AeroAstro, June 2004

Sylvain Bruni, **"Artificial Gravity: Neurovestibular Adaptation to Incremental Exposure to Centrifugation"**, SM AeroAstro, August 2004

David Benveniste, **"Cognitive Conflict in Learning Three-Dimensional Space Station Structures"**, SM, AeroAstro, August 2004

Kevin Duda, "**Virtual Equivalence: Matching Visual Scene and Treadmill Walking Speeds in Virtual Reality**", SM, AeroAstro, 2004

Miwa Hayashi, "**Hidden Markov Models for Analysis of Pilot Instrument Scanning and Attention Switching**", Ph.D., AeroAstro, August 2004

## 2005

Kristen Bethke, "**Measurement of Human Body Surface Strain for Advanced Spacesuit Design**", SM, June 2005

Christopher E. Carr, "**The Bioenergetics of Walking and Running in Space Suits**", ScD, June, 2005

Jessica L. Edmonds, "**Exercise in Artificial Gravity**", SM AeroAstro, June 2005

## 2006

Anton Aboukhalil, "**Systems Approach to the Design of Locomotive Fatigue Management Technologies**", SM, AeroAstro, February 2006

Julie Arnold, "**Towards a Framework for Architecting Heterogeneous teams of Humans and Robots for Space Exploration**", SM, AeroAstro, June 2006

Daniel Aaron Buckland, "**A Training Methodology for Spatial Orientation in Spacecraft**" SM, AeroAstro, September 2006

Paul Z. Elias, "**Incremental Adaptation to Yaw head Movements During 30RPM Centrifugation**", SM, AeroAstro, June 2006

Philip A. Ferguson, "**Quantifying and Modelling Adaptive Astronaut Movement: Motion Strategies for Long-Duration Spaceflight Missions**", PhD, AeroAstro, June 2006

Nicole Jordan, "**Multidisciplinary Spacesuit Modeling and Optimization: Requirement Changes and recommendations for the Next-Generation Spacesuit Design**", SM AeroAstro, June 2006

Jeremie Pouly, "**A Parametric Study of Vestibular Stimulation During Centrifugation**", SM AeroAstro, February 2006

Webster, Bruce, "**Low Magnitude High Frequency Vibrations Applied to the Foot through the Pedal of a Human Powered Artificial Gravity (HPAG) Cycle**", SM, AeroAstro, February 2006

Zhe Liang Sim, "**Development of a Mechanical Counter Pressure Bio-Suit System for Planetary Exploration**", SM AeroAstro, February 2006

## 2007

Cizaire, Claire, **Effect of Two-module-docked Spacecraft Configurations on Spatial Orientation**, SM, AeroAstro, February 2007

Duda, Kevin, R., **SQUAT EXERCISE BIOMECHANICS DURING SHORT-RADIUS CENTRIFUGATION**, PhD, AeroAstro, February 2007

Judnick, Daniel C., **Modeling and Testing of a Mechanical Counterpressure BioSuit System**, SM, AeroAstro, June 2007

Menchaca Brandan, M. Alejandra, **Influence of Spatial Orientation and Spatial Visualization on Space Teleoperation Performance**, SM, AeroAstro, June 2007

Marquez, Jessica J., **HUMAN-AUTOMATION COLLABORATION: DECISION SUPPORT FOR LUNAR AND PLANETARY EXPLORATION**, PhD, Aero Astro, February 2007

Sienko, Kathleen, **"Perturbation-based detection and prosthetic correction of vestibulopathic gait"**, PhD, HST, February 2007

Sheehan, Scott, **"The Effect of Head Turn Velocity on Cross-Coupled Stimulation During Centrifugation"**, SM AeroAstro, February 2007

Wagner, Erika, **"Musculoskeletal Adaptation to Partial Weight Suspension: Studies of Lunar And Mars Loading"**, Ph.D., Aero Astro, September 2007

## **2008**

Edmonds, Jessica **"Exercise protocols during short-radius centrifugation for artificial gravity"**, Ph.D., AeroAstro, June 2008

Fulford-Jones, Thaddeus R.F., **"The Mars Gravity Biosatellite as an Innovative Partial Gravity Research Platform**, Ph.D., AeroAstro September 2008

Mateus, Jaime, **"The Effect of Sleep on the Adaptation to the Cross-Coupled Stimulus During Artificial Gravity"**, SM, AeroAstro, June 2008

Stirling, Leia A., **"Development of Astronaut Reorientation Methods: A Computational and Experimental Study"**, Ph.D., AeroAstro, June 2008

## **2009**

Oravetz, Christopher, **"Human Estimation of Slope, Distance, and Height of Terrain I Simulated Lunar Conditions"**, SM AeroAstro, February 2009

Tomlinson, Zakiya, **"Influence of Spatial Abilities on Primary and Secondary Space Telerobotics Operator Performance"**, SM AeroAstro, February 2009

Newman, Michael, **"A Multisensory Observer Model for Human Spatial Orientation Perception"**, SM AeroAstro, June 2009

Tan, Junjay, **"Advancing Clinical Gait Analysis Through Technology and Policy"**, SM, TPP and ME, June 2009

Rader, Andrew Alan, **“Motion Perception with Conflicting or Congruent Visual and Vestibular Cues”**, Ph.D. in Aerospace Biomedical Engineering, August 2009

## 2010

Christou, George Alexander, **“Development of Helmet Liner for Protection Against Blast Induced Trauma”**, SM, AeroAstro, February 2010

Clark, Torin K. , **“Human Spatial Orientation Perceptions during Simulated Lunar Landing”**, SM, AeroAstro, June 2010

Holschuh, Bradley Thomas, **“Space Exploration Challenges: Characterization and Enhancement of Space Suit Mobility and Planetary Protection Policy Analysis”**, SM AeroAstro & Technology and Policy Program, June 2010

Johnson, Aaron W., **“An Integrated Traverse Planner and Analysis Tool for Future Lunar Surface Exploration”**, SM, AeroAstro, June 2010

Kaderka, Justin D., **“A Critical Benefit Analysis of Artificial Gravity as a Microgravity Countermeasure”**, SM AeroAstro, June 2010

Pontillo, Teresa M., **“Spatial Ability and Handedness as Potential Predictors of Space Teleoperation Performance”**, SM, AeroAstro, June 2010

Venkatesan, Raghav Harini, **“Multisensory Models for Human Spatial Orientation Including Threshold Effects”**, SM, AeroAstro, June 2010

Opperman, Roedolph A., **“Astronaut Extravehicular Activity – Safety, Injury & Countermeasures & Orbital Collisions & Space Debris – Incidence, Impact & International Policy”**, SM in AeroAstro and SM in TPP, September 2010

## 2011

Anderson, Allison P., **“Addressing Design Challenges in Mechanical Counterpressure Spacesuit Design and Space-Inspired Informal Education Policy”**, SM, AeroAstro, February 2011

Goel, Rahul, **“Study of an Advanced helmet Liner Concept to Reduce TBI: Experiments & Simulation using Sandwich Structures”**, SM, AeroAstro, February 2011

Hainley, Christopher, **“Lunar Landing: Dynamic Operator Interaction with Multi-Modal Automation Systems”**, SM, AeroAstro, February 2011

Stimpson, Alexander J., **“Design and Evaluation of an Achievability Contour Display for Piloted Lunar Landing”**, SM in AeroAstro, February 2011



Vechart, Andrew, "**Design of a Composite Combat helmet Liner for Prevention of BlastInduced Traumatic Brain Injury**", SM, School of Engineering, Computation for Design and Optimization, February 2011

Arai, Tatsuya, "**Estimation of Cardiovascular Indices by Analysis of the Arterial Blood Pressure Signal**", PhD, AeroAstro, June 2011

Buckland, Daniel, "**Ultrasound Imaging of Cervical Spine Motion for Extreme Acceleration Environments**", PhD, AeroAstro, September 2011

Forman, Rachel Emily, "**Objective Performance Metrics for Improved Space Telerobotics Training**", SM, AA, September 2011

Wen, Hui Ying, "**Human-Automation Task Allocation in Lunar Landing: Simulation and Experiments**", SM, AA, September 2011

## 2012

Galvan, Raquel, "**Effects of Fatigue on Simulated Space Telerobotic Performance: A Preliminary Study Analysis**", SM, AA, September 2012

Gilkey, Andrea, "**Spacesuit simulator for extravehicular activity experimentation and training**", SM, AA, June 2012

Lowenthal, Caroline, "**Evaluation of Sleepiness in Space Robotics task Performance and Discussing Sleep with High School Students in a Museum**" SM AA & TPP, February 2012

Wang, Victor, "**Bimanual Cross-Coupling in Space Telerobotics**", SM ME, February 2012

Yost, Allison, "**Fluid-Filled Helmet Liner Concept for Protection Against Blast-Induced Traumatic Brain Injury**", SM ME, June 2012

## 2013

Trigg, Chris, "**Design and Validation of a Compact Radius Centrifuge Artificial Gravity Test Platform**", SM AA, June 2013

Tritchler, Stephanie, E., "**The Effect of Dust Blowback on Spatial Orientation Estimation During Lunar Landing**", SM AA, June 2013

Aboukhalil, Anton, "**Computationally-Guided Inference of Cis-Regulatory Codes in Metazoans**", Ph.D., AA, September 2013

Clark, Torin, K., "**Human Perception and Control of Vehicle Roll Tilt in Hyper-Gravity**", Ph.D., AA, September 2013

## 2014

Anderson, Allison, **Understanding Human–Space Suit to Prevent Injury During Extravehicular Activity**, Ph.D., AA, June 2014

Dopart, Celena H., **Astronaut-Centric Analysis of a Jetpack with Integrated Control-Moment Gyroscopes for Enhanced Extravehicular Activity Performance**, SM, AA, June 2014

Holschuh, Bradley T., **MECHANICAL COUNTER-PRESSURE SPACE SUIT DESIGN USING ACTIVE MATERIALS**, Ph.D., AA, June 2014

Kaderka, Justin, **Experiments and a Model of Pilot System Failure Detection during Simulated Lunar Landing**, Ph.D., AA, June 2014

Lasota, Przemyslaw A., **“Developing Safe and Efficient Robotic Assistants for Close Proximity Human-Robot Collaboration”**, SM, AA, June 2014

Rize, Jared, **Simulation Development and Analysis of Attitude-Control System Architectures for an Astronaut Mobility Unit**, SM, AA, June 2014

Vasques, Rebecca, **The Variable Vector Countermeasure Suit for Space Habitation and Exploration**, SM, ME, June 2014

Ellman, Rachel, **Skeletal Adaptation to Reduced Mechanical Loading**, PhD, HST, Biomedical Engineering, September 2014

## 2015

Diaz, Ana, **Exercise under Artificial Gravity – Experimental and Computational Approaches**, PhD, AA, June 2015

Hilbert, Alexandra, **Human-Spacesuit Interaction: Understanding Astronaut Shoulder Injury**, SM, AA, June 2015

Johnson, Aaron, **“Analyzing the Effects of Dynamic task Allocation on Human-Automation System Performance”**, PhD, AA, February 2015

Obropta Jr., Edward William, **On the Deformation of Human Skin for Mechanical Counter Pressure Space Suit Development**, SM, AA, June 2015

2016

Bertrand, Pierre, **Enhancing Astronaut Mobility Through Spacesuit Kinematics And Interactive Space Outreach**, SM, June 2016

Broll, Anthony, **Trust in Adaptive Automation in a Tactical Search and Navigation Task**, SM, AA  
June 2016

Kendrick, Dustin, **The Gravity Loading Countermeasure Skinsuit: A Passive Countermeasure Garment for Preventing Musculoskeletal Deconditioning During Long-duration Spaceflight**, PhD,  
AA & HST (Bioastronautics Program), June 2016

Galvan – Garza, Raquel, **Enhancement of Perception with the Application of Stochastic Vestibular Stimulation**, PhD, AA, June 2016

Geiger, Lynn M., **Investigation of Customized Refresher Training for Telerobotic Operations in Long-duration Spaceflight**, SM, AA, June 2016

Groshong, Hannah, **Task Modeling and Assessment for Human--System Interaction in Freight Rail Operations**, SM TPP, June 2016

Vanega, Morris, **Characterization of Inertial Measurement Unit Placement on the Human Body Upon Repeated Donnings**, SM, AA, June 2016

2017

Yang, Yongkai Eugene. **Using object process methodology to develop interfaces and smart electronic procedures for simulated telerobotic operations**, SM, AA, February 2017

Eke, Chika U., **Agility Quantification using Body Worn Inertial Sensors**, SM, ME, June 2017

Gibson, Alison E., **The Design, Development, and Analysis of a Wearable, Multi-modal Information Presentation Device to Aid Astronauts in Obstacle Avoidance During Surface Exploration**, SM, AA,  
June 2017

Hall, Sherrie A. **Effect of Control Interface Implementation on Operation of a Multi Degree of Freedom Telerobotic Arm**, PhD, AA, June 2017

McGrath, Timothy M., **Influence of Motion Profile on Estimating Anatomical Elbow Joint Axes using Inertial Measurement Units**, SM, AA, June 2017

Meyen, Forrest E., **System Modeling, Design, and Control of the Mars Oxygen In-Situ Resource Utilization Experiment (MOXIE) and Implications for Atmospheric ISRU Processing Plants**, PhD,  
AA, June 2017

2018

Blake Bequette - SM in June 2018 (Stirling)

**The Effect of a Powered Lower-Body Exoskeleton on Physical and Cognitive Warfighter Performance**

Srinivasa Aditya Bhattaru - SM in June 2018 (Hoffman)

**Design, Testing, and Validation of the Search for Extra-Terrestrial Genomes Instrument**

Conor Cullinane – PhD in June 2018 (Stirling)

**Evaluation of the Mark III Spacesuit: An Experimental and Computational Modeling Approach**

Eric Daniel Hinterman- SM in June 2018 (Hoffman)

**System Modeling, Graphical User Interface Development, and Sensors Testing for the Mars Oxygen In-Situ Resource Utilization Experiment (MOXIE)**

Christopher David King – SM in June 2018 (Stirling)

**A Coupled Contact-Mechanics Computational Model for Studying Deformable Human-Artifact Contact**

Johannes Norheim - SM in June 2018 (de Weck/Hoffman)

**Path Planning for Human Planetary Surface Exploration in Rough Terrain**

Ho Chit Siu – PhD in June 2018 (Stirling)

**Moving and Adapting with a Learning Exoskeleton**

2019

Richard Fineman – PhD in May 2019 (HST – Stirling)

**Biomechanical human performance metrics of coordination and balance for operational decision-making**

Jessica Todd – SM in September 2019 (Stirling)

**Commanding small satellites for simulated spacecraft inspections using augmented reality**

2020

Gupta Aditi- PhD 2020 (HST – Stirling)

**Human interaction & gait strategy with tightly-coupled lower-extremity systems**

Lombardo Seamus- SM (Stirling/Duda)

**Evaluating the effect of spacesuit glove fit on functional task performance**

Milton Julia – SM 2020 (TPP – Stirling)

**Technical and policy considerations of sensor-Based decision aids**

Porter Allison- SM in September 2020 (Newman)

**Design of soft knee exoskeleton and modeling effects of variable stiffness for advanced space suits and planetary exploration**

Rachel Price – SM in June 2020 (Oman)

**Assessment of the Expert Locomotive Engineer’s Mental Model through Expert-Novice Interactions**

Stroming Jeremy- SM 2020 (Newman)

**Design and evaluation of elements of a life support system for mechanical counterpressure spacesuits**

## 2021

BROWDER, Rebecca - SM in June 2021 (Newman)

**From the Earth to the Moon: Economic Viability of Commercial Spaceports & Science and Technology Planning for MIT Lunar Exploration**

GONZALEZ, Sarah- SM in June 2021 (Stirling)

**Assessment of Powered Ankle Exoskeleton on Human Stability and Balance**

HARVEY, Alvin - SM in June 2021 (Newman)

**Partial Gravity Simulators, Harness Design, and an Examination of Gait Transitions in Partial Gravity**

KOO, Bon (Brandon) – SM in June 2021 (Newman)

**The Exploration of KNN-based Neural Control of Pneumatically Actuated Artificial Muscle**

LESHCHINSKIY, Brandon- SM in June 2021 (Newman)

**Addressing climate change through community organizing and machine learning**

MCGRATH, Timothy – PhD in February 2021 (Stirling)

**IMU-based estimation of human lower body kinematics and applications to extravehicular operations**

POE, Daniel – SM in June 2021 (Hoffman)

**Aerodynamics and Impact Simulation of an Air-Dropped Ice Penetrator**