

John L. Crassidis
Department of Mechanical and Aerospace Engineering

04/24/08

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EDUCATION

State University of New York at Buffalo, Ph.D.

“Integrated Estimation and Identification for Robust Control of Multivariable Systems”
Mechanical Engineering, May 1993

State University of New York at Buffalo, M.S.

“Tracking and Control of an Automatic Carrier Landing System Utilizing Aircraft Sensor Information”
Mechanical Engineering, February 1991

State University of New York at Buffalo, B.S.

Mechanical Engineering, May 1989

TECHNICAL INTERESTS

Robust Control of Nonlinear Systems, Spacecraft Attitude Determination and Control,
Novel Navigation Concepts and Hardware Development

PROFESSIONAL EXPERIENCE

8/07 – present **University at Buffalo - Associate Director of the Center for Multisource Information Fusion (CMIF)**
8/07 – present **University at Buffalo - Professor, Department of Mech. & Aero. Engineering**
8/02 – 7/07 **University at Buffalo - Associate Professor, Department of Mech. & Aero. Engineering**
1/01 – 7/02 **University at Buffalo - Assistant Professor, Department of Mech. & Aero. Engineering**
8/98 – 1/01 **Texas A&M University - Assistant Professor, Department of Aerospace Engineering**
1/96 - 7/98 **The Catholic University of America - Assistant Professor, Department of Mechanical Engineering**
5/94 - 1/96 **National Research Council Tenable at NASA Goddard - Postdoctoral Research Fellow**
10/93 - 5/94 **Ford Motor Company - Consultant**
1/92 - 1/93 **National Transportation Research Board - Research Fellow**
3/92 - 10/92 **Calspan - U.B. Research Center (CUBRC) - Research Assistant**
1/91 - 12/91 **Bell Aerospace Textron - Research Assistant**
9/89 - 1/91 **Bell Aerospace Textron - Research Assistant**

TECHNICAL EXPERIENCE

1/89 - 5/89 **Taylor Devices - Internship**

HONORS

- **American Institute of Aeronautics and Astronautics**, 2006 Sustained Service Award
- **Society of Automotive Engineers**, 2006 Ralph R. Teetor Educational Award
- **Best Paper Award**, 2003 AIAA Guidance, Navigation & Control Conference (out of 350 papers)
- **Best Paper Award**, 2001 AIAA Guidance, Navigation & Control Conference (out of 225 papers)
- **University at Buffalo**, Young Investigator Award, '02
- **National Aeronautics and Space Administration**-Summer Faculty Fellowship Award, '97-'98
- **National Aeronautics and Space Administration**-Postdoctoral Fellowship Award, administered by the **National Research Council**, '94-'96
- **United States Achievement Academy**-National Collegiate Engineering Award, '93
- **National Transportation Research Board**-Graduate Research Fellowship Award,

- administered by the **National Research Council**, '92-'93
- **SUNY at Buffalo**-Part Time Faculty Assistantship, '93
- **SUNY at Buffalo**-Graduate Teaching Assistantship, '90-'92
- **SUNY at Buffalo**-Graduate Research Assistantship, '90-'92
- Greek Orthodox Scholarship Award, '88-'89
- Engineering Dean's List, '87-'89 (undergraduate)

PROFESSIONAL SERVICE

ADVISORY BOARD, StarVision Technologies, '04-present.

PROGRAM REVIEWER, NASA Engineering and Safety Center (NESC) Guidance, Navigation and Control Technical Discipline Team, '07-present.

GUEST EDITOR, The Journal of the Astronautical Sciences, Special Issue: The Malcolm D. Shuster Astronautics Symposium, Vol. 54, Nos. 3 & 4, July-Dec. '06.

ASSOCIATE EDITOR, AIAA Journal of Guidance, Control, and Dynamics, '05-present

FACULTY ADVISOR, NASA's Reduced Gravity Student Flight Opportunities Program, '05-'06

FACULTY ADVISOR, AIAA-Texas A&M University Section, '99-'01

COMMITTEE MEMBER AND JUDGE, AIAA-Region IV Student Conference, '00

National Technical Committee of the AIAA, Guidance, Navigation and Control Committee, '97-present

- 1) Chair, '06-present
- 2) Vice Chair, '04-'06
- 3) Secretary, '04-'06
- 4) Best Paper for GN&C Conference, Subcommittee Chair
- 5) GN&C Graduate Student Award, Subcommittee Chair
- 6) GN&C Undergraduate Student Competition, Subcommittee Chair
- 7) Education, Subcommittee Chair
- 8) Steering Subcommittee, Member

MEMBER, AIAA Publication Ethical Standards Committee, '06

AIAA Congressional Visits Day, 3/98, 4/01

American Society of Mechanical Engineers (ASME)-Washington D.C. Section

- 1) Secretary, '97-'98
- 2) Director, '96-'97

American Institute of Aeronautics and Astronautics (AIAA)-Niagara Frontier Section

- 1) Council Member, '93-'94

MEMBER, American Society of Engineering Education (ASEE), '98-present

FACULTY ADVISOR, ASME-Catholic University Section, '96-'98

MEMBER, American Astronautical Society (AAS), '98-present

MEMBER, American Society of Mechanical Engineers (ASME), '87-present

MEMBER, Society of Automotive Engineers (SAE), '89-present

ASSOCIATE FELLOW, American Institute of Aeronautics and Astronautics (AIAA), '02-present

SENIOR MEMBER, American Institute of Aeronautics and Astronautics (AIAA), '97-'02

MEMBER, American Institute of Aeronautics and Astronautics (AIAA), '88-'97

Conference Service

- 7th International ESA Conference on Guidance, Navigation and Control Systems, Program Committee, '08
- AIAA Guidance, Navigation, and Control Conference, Session Chair, '07
- AIAA Guidance, Navigation, and Control Conference, Area Co-Chair, '06
- AIAA Guidance, Navigation, and Control Conference, Session Chair, '05
- 6th International ESA Conference on Guidance, Navigation and Control Systems, Program Committee, '05

- AAS/UB Malcolm D. Shuster Astronautics Symposium, General Chair, '05
- AIAA Guidance, Navigation, and Control Conference, Area Chair, '04
- AIAA Guidance, Navigation, and Control Conference, General Chair, Session Chair, '03
- AIAA Guidance, Navigation, and Control Conference, Session Chair, '02
- AIAA Guidance, Navigation, and Control Conference, Technical Co-Chair, '01
- AIAA Guidance, Navigation, and Control Conference, Session Chair, '01
- AIAA Guidance, Navigation, and Control Conference, Session Chair, '00
- AIAA International Space Station Service Vehicles Conference, Session Chair, '99
- AIAA Guidance, Navigation, and Control Conference, Session Chair, '97

UNIVERSITY AND COMMUNITY SERVICE

University at Buffalo

- Associate Director of the Center for Multisource Information Fusion (CMIF), '07-present
- Director of Undergraduate Studies in Aerospace Engineering, '06-present
- Faculty Search Committee, '06
- Online Course Evaluation Committee, '05
- Faculty Senate Alternate, '04-present
- Faculty Mentor, '02-present
- Honors Program Mentor, '02-present
- Ph.D. Comprehensive Examination, '01-present
- Undergraduate Studies Committee, '01-present

Texas A&M University

- Ph.D. Comprehensive Examination, '00
- Departmental Library Liaison, '99-'00
- Departmental Web Committee, 3/99

Catholic University of America

- Faculty Search Committee, 2/98
- Doctoral Academic Program Committee, 1/98
- Computer Assessment Committee, 9/97
- Faculty Search Committee, 7/97
- Academic Achievement Awards Committee, 4/97
- Organizer and Host, Student Paper Competition, ASME D.C. Section, 3/97
- Committee for Mechanical Engineering Chair Search, 2/97
- Mission Statement Committee in Mechanical Engineering, 10/96
- Undergraduate Curriculum in Mechanical Engineering Committee, 2/96

PROFESSIONAL DEVELOPMENT

- The National Science Foundation Regional Grants Conference, 3/98

COURSES INSTRUCTED

University at Buffalo

<i>Course</i>	<i>Title</i>	<i>Years Taught</i>
MAE 425	Spacecraft Dynamics and Control	Spring '07, Spring '08
EAS 496	Co-Op	Summer '07
MAE 674	Optimal Estimation Methods	Spring '06, Spring '05, Spring '04, Spring '03
MAE 472	Guidance Navigation & Control	Spring '06, Spring '05, Spring '04, Spring '03, Spring '02
MAE 571	Systems Analysis 1	Fall '07, Fall '06, Fall '05, Fall '04, Fall '03, Fall '02, Fall '01
SYS 577	Optimal Control Systems	Spring '01
SYS 436	Digital Control Systems	Spring '93

Texas A&M University

<i>Course</i>	<i>Title</i>	<i>Years Taught</i>
AERO 689	Estimation of Dynamic Systems	Fall '00, Fall '99
AERO 310	Aerospace Dynamics	Fall '00, Spring '00, Fall '99, Spring '99, Fall '98

Catholic University of America

<i>Course</i>	<i>Title</i>	<i>Years Taught</i>
ME 334	System Dynamics	Spring '98, Spring '97
ME 510	Modern Control Systems	Spring '98, Spring '97, Spring '96
ME 507	Mechanical System and Control	Fall '97, Fall '96
ME 571	Optimum Design of Mech. Systems	Fall '97
ME 555	Spacecraft Dynamics and Control	Fall '96

RESEARCH SUPERVISION

Completed

Ph.D.

- Kok-Lam Lai (Ph.D.), “Generalizations of the Complex-Step Derivative Approximation,” (9/06).
- Adam Fosbury (Ph.D.), “Control and Kalman Filtering for Relative Dynamics of a Formation of Uninhabited Autonomous Vehicles,” (9/06).
- Keun Joo Park (Ph.D.), “GPS Receiver Self Survey and Attitude Determination Using Pseudolite Signals,” (5/04).
- Jo-Ryeong Yim (Ph.D.), Co-Advised with Dr. John Junkins, “Autonomous Orbit Navigation of Interplanetary Spacecraft,” (12/02).
- Jongrae Kim (Ph.D.), “A New Approach to Robust Control: Model-Error Control Synthesis,” (8/02).
- Jong-Woo Kim (Ph.D.), “International Space Station Leak Localization Using Attitude Response,” (8/02).

M.S. Thesis

- Michael Andrie (M.S.), “Deterministic Relative Attitude Determination of Formation Flying Spacecraft,” (5/08).
- William Banas (M.S.) “Micro-arcsecond Line-of-Sight Filtered Performance for Spacecraft Formation Flying,” (5/08).
- Shu Ting Goh (M.S.), “Unscented Kalman Filtering for Relative Attitude and Position Estimation,” (9/07).
- Frank Centinello (M.S.), “Analysis of the ECEF and NED Covariance Propagation for the Navigational Extended Kalman Filter,” (5/07).
- Jemin George (M.S.), “Kalman Filter Approach to Model-Error Control Synthesis,” (5/07).
- Anjani Kumar (M.S.), “Design of Colored-Noise Extended Kalman Filter for Vision-Based Navigation Applications,” (5/07).
- Badr Alsuwaidan (M.S.), “Robust Longitudinal Aircraft Control Using Model-Error Control Synthesis,” (2/06).
- Chaitanya Tapaswi (M.S.), “Determination of Vessel Sizes and Refinement of 3D Imaging Geometry from Biplane Images of the Coronary Vasculature,” (9/05).
- Agnar Kenneth Nygaard Nielsen (M.S.), “Helicopter Dynamics and Robust Control,” (9/05).
- Jasbir Singh Vig (M.S.), “Improved Navigation of Vehicle Using GPS/INS with Line of Sight Measurements,” (9/05).
- Brian Michael Haas (M.S.), “Sensitivity Study: The Affects of Beacon Errors on a Vehicle’s Position and Attitude Estimation for a Vision-Based Navigation System,” (5/05).
- Son-Goo Kim (M.S.), “Kalman Filtering for Relative Spacecraft Attitude and Position Estimation,” (5/05).
- Adam Fosbury (M.S.), “Control of Relative Attitude Dynamics of a Formation Flight Using Model Error Control Synthesis,” (5/05).
- Arun Natarajan (M.S.), “Spacecraft Attitude Maneuvers with Input Saturation Using Model Error Control Synthesis,” (9/04).
- Kaylan Kappagantula (M.S.), “Linearizing Assumptions and Control Design for Spacecraft Formation Flying Maneuvers,” (5/04).
- Craig Cole (M.S.), “Fast Star Pattern Recognition Using Spherical Triangles,” (2/04).
- Krishnakumar Ramamoorthy (M.S.), “Potential Functions for En-Route Air Traffic Management,” (2/04).
- Kok-Lam Lai (M.S.), “In-Space Autonomous Spacecraft Alignment Calibration,” (9/03).
- Randy Chugh (M.S.), “Model-Error Control Synthesis for Spacecraft Attitude Maneuvers,” (5/03).
- Puneet Singla (M.S.), “A New Attitude Determination Approach Using Split Field of View Star Camera,” (8/02).
- Curtis Webb (M.S.), “GPS Position Determination Using a Nonlinear Predictive Filter,” (5/02).

- Roberto Alonso (M.S.), “Relative Navigation for Formation Flying of Spacecraft,” (5/01).
- David Nestle (M.S.), “Adaptive Optimization of Motion-Based Simulator,” (8/01).
- Malak Anees Samaan (M.S.), “Studies in Robust Control Systems with Application to Various Spacecraft Attitude Control Systems,” (3/00).

M.S. Project

- Yijia Sun (M.S.), “Robust Spacecraft Attitude Estimation using Multiple-Model Approaches,” (9/07).
- Min-Chang Tsai (M.S.), “Pitch Arm Control and Virtual Realization of T-Type Robot Helicopter,” (9/05).
- Hsieh Chang Keng (M.S.), “Simulating the Elevation and Azimuth Dynamics and the Trajectory Prediction for the Helicopter Model,” (5/05).
- Jayesh Minase (M.S.), “Unscented Filter for GPS Attitude Estimation,” (9/04).
- Garth Mathe (M.S.), “Aircraft Attitude and Gyroscope Drift Estimation Using Three Axis Magnetometer and Ground Reference Position Data,” (9/04).
- Paul Schifferle (M.S.), “In-Flight Simulation Capability of a Variable Stability Helicopter in the Longitudinal Axis,” (9/04).
- Ketan Churi, Kedar Deshpande, Anirudha Naik, and Jitesh Panicker (M.S.), “Simulation of Warfare Logistics in a Virtual Environment Using Motion-Based Object Tracking and Positional Coordinates Estimation,” (2/04).
- Guoshi Li (M.S.), “Application of Model-Error Control Synthesis to the Control of a Pneumatic Muscle Actuator System,” (9/03).

Current

- Frank Centinello (Ph.D.), “Analysis of Relative Inertial Navigation for Air Vehicles,” in progress (5/09).
- Jemin George (Ph.D.), “Adaptive Disturbance Accommodating Control,” in progress (5/09).
- Badr Alsuwaidan (Ph.D.), “Multiple Model Adaptive Estimation Using Autocorrelation,” in progress (5/08).
- Ibrahim Kecar (Ph.D.), “Design of a MEMS Vibration Actuator Using Bubble Actuation,” in progress (9/08).
- Hak-Jae Kim (M.S.), new student
- Sean Semper (M.S.), new student
- Christopher Nebelecky (M.S.), new student
- Jeremy Marschke (M.S.), new student

Postdoctoral Researchers

- Dr. Yang Cheng, (02-present)

Undergraduate Supervision

- Jeremy Marschke, Undergraduate Zimmer Fellowship, “Kalman Filtering for Relative Navigation,” 2007.
- Christopher Nebelecky, Undergraduate Zimmer Fellowship, “Navigation using Line-of-Sight Observations,” 2007.
- Amanda Schmidt, Undergraduate Zimmer Fellowship, “Spacecraft Formation Flying Navigation,” 2006.
- Anne-Marsha Joseph, SUNY Louis Stokes Alliance for Minority Participation Program, “Thruster Control of a Spacecraft Testbed Using Fans,” 2006.
- Jeremy Marschke, Undergraduate Zimmer Fellowship, “Spacecraft Momentum Management,” 2006.
- Michael Andrie, Undergraduate Zimmer Fellowship, “Spacecraft Attitude Control,” 2005-2006.
- Demissie Wolde-Gabriel, Collegiate Science & Technology Entry Program (CSTEP), “Robust Spacecraft Attitude Estimation,” 2004-2005.
- Krystine Santos, SUNY Louis Stokes Alliance for Minority Participation Program, “Construction of a Miniature Spacecraft,” 2005.
- Sean Semper, SUNY Louis Stokes Alliance for Minority Participation Program, “Construction of a Miniature Spacecraft,” 2004-2005.
- Adriana Crippen, SUNY Louis Stokes Alliance for Minority Participation Program, “Modeling of a Miniature Spacecraft,” 2003-2004.
- Adam Fosbury, Undergraduate Zimmer Fellowship, “3D Dynamics Experiments of Miniature Spacecraft,” 2003.
- Kok-Lam Lai, Undergraduate Zimmer Fellowship, “Development of a Miniature Spacecraft Testbed Model,” 2002.
- Curtis Webb, Undergraduate Summer Research Program, “Attitude Determination Using Pseudolites,” winner best paper presentation, 1999-2000.
- April Evans, Undergraduate Summer Research Program, “Vision-Based Navigation and Calibration,” winner best paper presentation, 2000.

Internship Programs

- Demissie Wolde-Gabriel, Collegiate Science & Technology Entry Program (CSTEP) Internship Program, 2004.

Committee Member

- Aaron Dando (Ph.D.), “Robust Adaptive Control of Rigid Spacecraft Attitude Maneuvers,” *Queensland University of Technology* (5/08).
- Kevin L. Wyffels (M.S.), “Development of a Ground Truth Simulator and Application of a Generalized Multiple-Model Adaptive Estimation Approach to Tune a State Estimation Filter,” *Rochester Institute of Technology* (11/07).
- Matthew L. Vossler (M.S.), “Deformation Limited Time Optimal Control of Flexible Structures,” *University at Buffalo* (9/07).
- K. V. Umamaheswara Reddy (M.S.), “Data Assimilation for Dispersion Models,” *University at Buffalo* (5/07).
- Hemanth Satyanarayana (M.S.), “Image Guided Liver Surgery using Augmented Reality,” *University at Buffalo* (2/07).
- Venkatraghavan Gourishankar (M.S.), “HAPSTICK – A High Fidelity Haptic Simulation for Billiards,” *University at Buffalo* (2/07).
- Charles Wang (Ph.D.), “Single Antenna GPS Attitude Algorithm for Non-Uniform Antenna Gain Pattern,” *Queensland University of Technology* (2/07).
- Rajankumar Bhatt (Ph.D.), “Towards Modular Cooperation Between Multiple Nonholonomic Mobile Manipulators,” *University at Buffalo* (2/07).
- Abdul Kather Rephy Parely (M.S.), “Modified Approach to Pennestri’s Optimal Design of Dynamic Vibration Absorbers,” *University at Buffalo* (9/06).
- Michael Fattey (M.S.), “Time-Delay Control of an Undamped Two Mode System,” *University at Buffalo* (9/06).
- Wanseok Yang (M.S.), “Optimal Approach for Autonomous Parallel Parking of Nonholonomic Car-Like Vehicle,” *University at Buffalo* (2/06).
- Chi-Han Yang (M.S.), “Artificial Mechanical System Modeling and Simulation,” *University at Buffalo* (2/06).
- Thomas Concord (M.S.), “Linear Matrix Inequality Based Robust Control Synthesis,” *University at Buffalo* (2/06).
- Jaisung Lee (M.S.), “Different Optimal Controls of a Ducted Fan Model,” *University at Buffalo* (9/05).
- Daniel Fuglewicz (M.S.), “A Six Degree-of-Freedom Vehicular Performance Measurement System (VPMS) with Integral Engine Speed Measurement,” *University at Buffalo* (9/05).
- Rajaey Kased (M.S.), “Rest-to-Rest Motion of an Experimental Flexible Structure Subject to Friction,” *University at Buffalo* (2/05).
- Regeesh Britto (M.S.), “Diagnostics of Arterial Pressure Pulse Using Haptic Kymograph-Remote Diagnostics of Vital Signs Through a Vibrotactile Device,” *University at Buffalo* (2/05).
- Leng-Feng Lee (M.S.), “Decentralized Motion Planning within an Artificial Potential Framework (APF) for Cooperative Payload Transport by Multi-Robot Collectives,” *University at Buffalo* (2/05).
- Bertrand Douillard (M.S.), “Design and Implementation of a SLAM Algorithm on an Autonomous Robot,” *University at Buffalo* (9/04).
- Dirk Tenne (Ph.D.), “Statistics Based Sampling for Controller and Estimator Design,” *University at Buffalo* (5/04).
- Chin Pei Tang (M.S.), “Manipulability-Based Analysis of Cooperative Payload Transport by Robot Collectives,” *University at Buffalo* (5/04).
- Seung Kook Jun (M.S.), “Kinetostatic Design of an Articulated Leg-Wheel Locomotion Subsystem,” *University at Buffalo* (3/04).
- Jae-Jun Kim (Ph.D.), “Point-to-Point Control of Flexible Systems Subject to Friction,” *University at Buffalo* (12/03).
- Rajankumar Bhatt (M.S.), “Formation Motion Planning for Payload Transport by Modular Wheeled Mobile Manipulators,” *University at Buffalo* (12/03).
- Byungki Kim (M.S. Project), “Fuel and Time Optimal Slosh Control for an Open Container,” *University at Buffalo* (12/02).
- Nidal Al-Masoud (Ph.D.), “Active Control of Combustion Instabilities,” *University at Buffalo* (8/02).
- Hye-Young Kim (Ph.D.), “Novel Methods for Spacecraft Attitude Estimation,” *Texas A&M University*, (3/02).
- Anna Fleming (M.S.) “A Dynamics Model Suitable for Multi-Purpose Vehicle Simulation,” *University at Buffalo* (9/01).
- Jason, Kolodziej (Ph.D.), “A Robust Model Determination Algorithm for Nonlinear System Identification,” *University at Buffalo* (9/01).
- Bumsoo Kim (M.S.), “Vehicle Estimation and Control Using Global Positioning System and Inertial Navigation,” *University at Buffalo* (8/01).
- Kai Harth (M.S.), “Research on an Enabling Infrastructure for Distributed Simulation,” *University at Buffalo* (1/01).
- Praveen Sudhakar Joshi (M.S.), “Direct Comparison of Neural Network, Fuzzy Logic and Model Predictive Variable Structure Vortex Flow Controllers,” *Texas A&M University* (8/99).
- Jaeho Oh (Ph.D.), “Control of Static and Dynamic Characteristics of Passive Magnetic Composites,” *Catholic University* (8/98).

- Shehta El-Sayed Abdou (Ph.D.), “Vibration Control of Beams with Magnetic Constrained Layer Damping,” *Catholic University* (3/98).
- Abdel-Hady Kamal Ebrahim (Ph.D.), “Vibration Control of Plates Using Magnetic Constrained Layer Damping,” *Catholic University* (2/98).
- Adel Abdel-Razek Omer (Ph.D.), “Active Control of Compressional Constrained Layer Damping Treatments Using Electromagnetic Actuation,” *Catholic University* (2/98).
- Eleanor Ketchum Silverman (Ph.D.), “Autonomous Navigation Recovery for Fine Pointing Low Earth Orbiting Spacecraft,” *George Washington University* (1/98).
- Zheng Gu (Ph.D.), “Control of Precision Pointing System,” *Catholic University* (1/98).
- William A. LaPlante (Ph.D.), “Vibration Control of Fluid-Loaded Cylindrical Shells Using Active Constrained Layer Damping,” *Catholic University* (1/98).

RESEARCH CONTRACTS – Total = \$5,286,057 (Prorated = \$2,670,808)

Current

Principal Investigator: John L. Crassidis
 Title: Precise Attitude and Geolocation Determination for Closed-Loop Topology Spacecraft Formations
 Sponsor: *Air Force Research Laboratory*
 Amount: \$243,258, 6/08-5/10 (Year 1 \$119,413, Year 2 \$123,845)

Principal Investigator: Mark Karwan
 Co-Investigators: Moises Sudit, Rakesh Nagi and John Crassidis
 Title: Optimization Planning and Tactical Intelligent Management of Aerial Sensors (OPTIMAS)
 Sponsor: *Office of Naval Research*
 Amount: \$1,171,255, 1/08-1/11 (Year 1 \$386,050, Year 2 \$392,585, Year 3 \$392,620)

Principal Investigator: James Llinas
 Co-Investigators: Stuart Shapiro, John Crassidis and Tarunraj Singh
 Title: Employing Context Information for L1 Fusion Approaches
 Sponsor: *Office of Naval Research*
 Amount: \$179,000, 1/08-1/09

Principal Investigator: John L. Crassidis
 Title: Attitude Determination and Geolocation from a Formation of Spacecraft with Laser Communication Devices
 Sponsor: *Air Force Research Laboratory*
 Amount: \$40,181, 9/07-7/08

Principal Investigator: John L. Crassidis
 Title: NASA NESC Guidance, Navigation and Control Program Review
 Sponsor: *NASA*
 Amount: \$38,535, 9/07-8/08

Principal Investigator: Moises Sudit
 Co-Investigators: Rakesh Nagi, John L. Crassidis and Agamemnon L. Crassidis
 Title: Hierarchical High Level Information Fusion Technologies
 Sponsor: *Office of Naval Research*
 Amount: \$448,410 1/06-5/08 (Year 1 \$224,205, Year 2 \$224,205)

Principal Investigator: John L. Crassidis
 Title: Mirco-Arcsecond Line-of-Sight Filtered Performance for Spacecraft Formation Flying
 Sponsor: *NASA-Goddard Space Flight Center*
 Amount: \$72,000, 7/05-6/08

Past Awarded

Principal Investigator: John L. Crassidis
 Title: Development of Robust Algorithms for Star Camera Attitude and Rate Estimation
 Sponsor: *StarVision Technologies*
 Amount: \$50,000, 6/06-9/07

Principal Investigator: John L. Crassidis
 Title: Missile Modeling and Data Fusion

Sponsor: Missile Defense Agency
Amount: \$30,191, 5/07-9/07

Principal Investigator: John L. Crassidis
Title: Intelligent Sample Sensor Algorithms

Sponsor: L-3Communications
Amount: \$141,497, 1/06-12/06

Principal Investigator: Tarunraj Singh
Co-Investigators: John L. Crassidis and James Llinas
Title: A Proposal for Research, Design, and Validation of Fusion-Based Techniques for Tracking of Ground-Based Objects

Sponsor: Overwatch Systems
Amount: \$199,981 11/05-12/06

Principal Investigator: John L. Crassidis
Title: Development of Automated Alignment and Calibration Algorithms
Sponsor: NASA-Goddard Space Flight Center
Amount: \$149,981, 8/02-9/06 (Year 1 \$45,998, Year 2 \$49,997, Year 3 \$53,985)

Principal Investigator: John L. Crassidis
Title: Unscented Filtering for Undersampled Data Reconstruction
Sponsor: L-3Communications
Amount: \$33,380, 6/05-1/06

Principal Investigator: John L. Crassidis
Title: Kalman Filtering for GPS/INS Aircraft Applications
Sponsor: Calspan
Amount: \$7,158.15, 5/05-9/05

Principal Investigator: John L. Crassidis
Title Robust Control of Nonlinear Systems Using Model-Error Control Synthesis
Sponsor: National Science Foundation
Amount: \$76,019, 8/02-8/04

Principal Investigator: John L. Crassidis
Title: NSTL Attitude Determination Pseudolite Task
Sponsor: NASA-Johnson Space Center
Amount: \$250,244, 1/00-12/04 (Year 1 \$72,248, Year 2 \$87,097, Year 3 \$89,227)

Principal Investigator: John L. Junkins
Co-Investigators: Thomas C. Pollock and John L. Crassidis
Title: Micro Spacecraft Attitude Sensing System
Sponsor: NASA-Langley Research Center
Amount: \$600,000 2/00-1/03 (Year 1 \$200,000, Year 2 \$200,000, Year 3 \$200,000)

Principal Investigator: John L. Junkins
Co-Investigators: Thomas C. Pollock and John L. Crassidis
Title: DIGISTAR Attitude Determination System for GIFTS
Sponsor: NASA-Langley Research Center
Amount: \$848,511 7/00-6/02 (Year 1 \$500,000, Year 2 \$348,511)

Principal Investigator: John L. Junkins
Co-Investigator: John L. Crassidis
Title: A New Sensor Concept for Vision-Based Navigation of Spacecraft, Aircraft, and Robots
Sponsor: Texas Higher Education Coordinating Board
Amount: \$191,911, 1/00-1/02

Principal Investigator: John L. Crassidis
Co-Investigator: Srinivas R. Vadali
Title: ISS Leak Localization Based on Attitude Response
Sponsor: United Space Alliance, LLC
Amount: \$158,506, 9/99-8/02

Principal Investigator: John L. Crassidis
Co-Investigator: John L. Junkins
Title: Vision-Based Navigation for Spacecraft Formation Flying
Sponsor: NASA-Goddard Space Flight Center
Amount: \$391,804 1/00-8/02 (Year 1 \$218,760, Year 2 \$173,044)

Principal Investigator: John L. Crassidis
Title: Attitude Determination Schemes for the CEGANS Sensor
Sponsor: NASA-Goddard Space Flight Center
Amount: \$5,900, 11/01-12/01

Principal Investigator: John L. Crassidis
Title: Autonomous Attitude Determination for ISS Applications Using Pseudolite Signals
Sponsor: NASA-Johnson Space Center
Amount: \$57,212, 2/99-10/99

Principal Investigator: John L. Crassidis
Co-Investigator: Carl Knospe (University of Virginia)
Title: Reaction Wheel Jitter Reduction Through Active Control of Magnetic Bearings
Sponsor: NASA-Goddard Space Flight Center
Amount: \$50,000, 3/98-11/98

Principal Investigator: John L. Crassidis
Title: Robust GPS Attitude Determination Scheme
Sponsor: NASA-Goddard Space Flight Center
Amount: \$15,373, 3/98-11/98

Principal Investigator: John L. Crassidis
Title: Robust Predictive Attitude Determination Using Global Positioning System Signal
Sponsor: NASA-ASEE Summer Faculty Fellowship Program
Amount: \$10,000, 6/98-8/98

Principal Investigator: John L. Crassidis
Title: Attitude Determination Using Global Positioning System Signal
Sponsor: NASA-ASEE Summer Faculty Fellowship Program
Amount: \$10,000, 6/97-8/97

CONSULTING CONTRACTS – Total = \$73,825

- “Development of Robust Algorithms for Spacecraft Navigation using Laser Communication Systems,” *Space Photonics Inc.*, \$30,000, 2007.
- “Kalman Filter Techniques for Star Tracker Velocity Estimation,” *StarVision Technologies*, \$20,000, 2006.
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 ASME Journal of Vibration and Acoustics
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 AAS Journal of the Astronautical Sciences
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 Measurement Science and Technology
 Aerospace Science and Technology
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