

Dr. James M. Rankin
Avionics Engineering Center
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Education

Ph.D. Electrical Engineering (Control Systems) Iowa State University, Ames, Iowa 1986
Major Professor: Dr. R. Grover Brown

MS Electrical Engineering Iowa State University, Ames IA 1982

BS Electrical Engineering S.D. School of Mines & Technology
Rapid City, SD 1978

Professional Employment

Ohio University, Athens OH 1997-present
Director, Avionics Engineering Center

St. Cloud State University, St. Cloud, MN 1989-1997
-Chair (1997), Professor (1995), Associate Professor (1989), Department of Electrical Engineering

Karanna Systems Plus, Consulting Company, Owner 1990-Present:
-Systems Engineering Consultant specializing in Systems Engineering seminars

Rockwell International, Collins Commercial Avionics 1978-1989
Cedar Rapids, Iowa

Accomplishments

Elected Chair, AIAA Digital Avionics Technical Committee. 2003.

Acquired the funding for a new Avionics Engineering Research Office (AERO), located at the Ohio University Airport, started construction in August 2003. Estimated completion time is July 2004.

Selected to serve as the General Chair for the 23rd IEEE-AIAA Digital Avionics Systems Conference to be held in Salt Lake City. 2004.

Technical Program Chair, 22nd IEEE-AIAA Digital Avionics Systems Conference, Indianapolis, 2003.

Nominated and re-elected to a second three-year term, IEEE Aerospace and Electronic Systems, Board of Governors, 2002.

General Aviation Track Chair and on the Student Activities Committee for the 21st Digital Avionics Systems Conference (DASC) at Irvine CA, 2002.

General Aviation Track Chair and Student Activities Chair for the 20th Digital Avionics Systems Conference (DASC), 2001.

NASA Turning Goals Into Reality (TGIR) Award given to AEC team for participation in NASA Runway Incursion/ Synthetic Vision demonstration at DFW, 2001.

Elected to American Institute of Aeronautics and Astronautics (AIAA) Digital Avionics Technical Committee (DATC), 2000.

Elected to 3-year term, IEEE Aerospace and Electronic Systems, Board of Governors, 1999. Served AESS BoG as VP Education during the last two years of the term,

NASA / American Society of Engineering Educators (ASEE). \$10k Summer Faculty Fellowship at NASA-Langley Research Center. System development of an Electronic Taximap flight test. 1994.

ASEE-NASA Summer Faculty Fellow. (\$10k) Summer Faculty Fellowship at NASA-Langley Research Center. Development of a Global Positioning System (GPS) / Differential GPS simulator. 1993.

External Grants and Funding

NASA Small Aircraft Transportation System (SATS), 2003

NASA Small Aircraft Transportation System (SATS) 2001.

NASA Small Aircraft Transportation System (SATS), (\$33k) 2001.

FAA Runway Incursion Reduction Program. \$90k. 2000.

NASA-Langley Research Center. (\$387k) Controller Pilot Data Link communications (CPDLC) to reduce Runway Incursions. 1998.

NASA-Langley Research Center. (\$34k) Air Traffic Controller workstation. 1997

Neptune Sciences, (\$5k) airborne laser depth-finding system. 1996.

NASA-Langley Research Center. (\$192k) Air Traffic Controller Workstation for the Low Visibility Landing and Surface Operations. 1996.

NASA-Langley Research Center. (\$24k) Defining Navigation Accuracies for Low Visibility Taxiing on the Airport Surface. 1995.

Minnesota Department of Transportation. (\$80k) Establish a Differential GPS base station. 1995.

Rockwell International, Collins Avionics Division. (\$15k) Advanced aircraft autopilot systems. 1994

Minnesota Technology. (\$21k) Design and develop an Automated Optical Lens Generator. 1991.

Rockwell International, Collins Air Transport. (\$13k) TCAS Angle of Arrival Calculation. 1990.

Rockwell International, Collins Air Transport. (\$31) TCAS DSP algorithms. 1989.

Awards

The NASA Synthetic Vision Systems team was awarded the 2001 NASA Turning Goals into Reality (TGIR) award for the Dallas-Fort Worth (DFW) flight demonstration.

DASC conference paper selected Best in Session and Best in Track. 1998.

Outstanding Student Counselor recognition from the IEEE Industrial Applications Society, 1992.

Papers

Uijt de Haag, M.; Thomas, R; and Rankin, J. "A 3-Dimensional Cockpit Display with Traffic and Terrain Information for the Small Aircraft Transportation System", Proceedings of the ION-GPS 2002, Portland OR, September 2002.

Jones, D., and Rankin, J. "A System for Preventing Runway Incursions", The Journal of Air Traffic Control, July-September 2002.

Uijt de Haag, M.; Thomas, R; and Rankin, J. "Initial Flight Test Results of Ohio University's 3-Dimensional Cockpit Display of Traffic Information", " , IEEE's 2002 Position, Location, and Navigation Symposium (PLANS), Palm Springs, CA, April 2002. Published in the Conference Proceedings.

Best, E., and Rankin, J. "Controller-Pilot Data Link Results from NASA and FAA Dallas-Fort Worth 2000 Test and Demonstration", 20th Digital Avionics Systems Conference (DASC), 2001.

Gunawardena, S., and Rankin, J. "Controller - Pilot Communications Using a VDL Mode 2 Datalink for the NASA Runway Incursion Prevention System", 20th DASC, 2001.

Young, S., and Rankin, J., "Improving the Safety of Airport Surface Operations", Air Traffic Technology International, November, 1998.

Rankin, J., and Mattson, P., "Controller-Pilot Data Link Statistics from NASA's 1997 Atlanta Flight Test", 17th Digital Avionics Systems Conference (DASC), Seattle, WA, October 98.- Selected Best Paper in Session and Track.

Rankin, J., and Mattson, P. "Controller Interface for Controller-Pilot Data Link Communications", 16th Digital Avionics Systems Conference (DASC) Proceedings, Irvine, CA. October 1997.

Rankin, J. "Air Traffic", IEEE Encyclopedia of Electrical and Electronics Engineering, John G. Webster, Ph.D., editor, invited article. September 1997.

Mattson, P., and Rankin, J. "Research and Design of an ATCT Ground Controller CPDLC Workstation" 42nd Annual Air Traffic Control Association Conference Proceedings, pp. 38-41, Washington, D.C., September 1997.

Rankin, J. "GPS and Differential GPS: An Error Model for Sensor Simulation", IEEE's 1994 Position, Location, and Navigation Symposium (PLANS), Las Vegas, NV, April 11-15, 1994. Published in the Conference Proceedings.

Rankin, J. "Undergraduate Assistance in the Development of an Automated Lens Generator". American Society of Engineering Education (ASEE) 1992. Published in 1992 ASEE Conference Proceedings. Pp. 1725-1727.

Rankin, J. "Avionics Systems Engineering Education", 10th Digital Avionics Systems Conference. Institute of Electrical and Electronics Engineers (IEEE) and the American Institute of Aeronautics and Astronautics (AIAA). Published in Conference Proceedings, Los Angeles, CA, October 14-17, 1991.

Rankin, J. "Electrical Engineering Graduates: Is industry getting what they want?". 1991 American Society of Engineering Education (ASEE) published in ASEE 1991 Conference Proceedings.

Technical Reports

Rankin, J.; Alder, F.; Gunawardena, S.; and Mattson, P. "Controller's Communication and Situational Awareness Terminal (C-CAST) for the NASA Runway Incursion Prevention System Demonstration at the Dallas-Fort Worth Airport", Final Report OU/AEC 01-29TM-NAS1-00108-1, September 2002.

Rankin, J. "Modifying and Testing ATC Controller Interface (CI) for Data Link Clearances", Technical Memorandum OU/AEC 01-06TM-NAG1-2036, September 2001

DiBenedetto, Michael F., James M. Rankin and David W. Diggle, "Development of Provisional Flight Inspection Criteria for Wide Area Augmentation System (WAAS) Approach Procedures", OU/AEC 98-16TM00078/2-1, Avionics Engineering Center, School of Electrical Engineering and Computer Science, Ohio University, Athens, Ohio, September 1998.

Ayers, G., Herringshaw, D., Rankin, J., and Fabre, D. "Design Feasibility Study for Laser Airborne Bathymetry System (LABS)". Draft report submitted by Neptune Sciences, Slidell, LA, to The Center for Tactical Oceanographic Warfare Support office, Naval Research Laboratory, Code 7410, Stennis Space Center, MS. October 1996.

"GPS Statistical Error Simulator", NASA-ASEE Summer Research Final Report, Langley Research Center, 1993.

Affiliations

Air Traffic Control Association (ATCA)
Aircraft Owners and Pilots Association (AOPA)
American Institute of Aeronautics and Astronautics
 Digital Avionics Technical Committee
International Loran Association (ILA)
Institute of Navigation (ION)
Institute of Electrical and Electronics Engineers (IEEE) -
 Aerospace/Electronic Systems (AESS)
Registered Professional Engineer in Minnesota - Inactive
Registered Professional Engineer in Iowa - Inactive
RTCA, formerly Radio Technical Commission for Aeronautics
Society of Automotive Engineers
 Control & Guidance Systems Committee

Honorary Affiliations

Eta Kappa Nu, Honorary Electrical Engineering Fraternity
Sigma Xi, the Scientific Research Society
Phi Kappa Phi, Honorary Society

Other information

Certified Flight Instructor - Airplane
Commercial pilot license, single and multi-engine aircraft, instrument rating