



Member Research Staff – Control of Mechatronic Systems

Mitsubishi Electric Research Laboratories (MERL) Cambridge, Massachusetts, USA

Mitsubishi Electric Research Laboratories (MERL, <http://www.merl.com>) located in Cambridge, Massachusetts, USA, invites qualified candidates to apply for the position of **Member, Research Staff** and to join its growing Mechatronics Group. There are two positions open and candidates at all levels of experience will be considered. Candidates with interest and expertise in state estimation and/or system identification are especially encouraged to apply. Candidates with experience with transportation systems and/or thermofluid systems will be given preference. Successful candidates are expected to perform original, relevant research in the area of control systems, to impact corporate technology & product development, and to publish in leading control systems journals.

MERL is the North American Research and Development organization for Mitsubishi Electric Corporation (MELCO, <http://global.mitsubishielectric.com>), a \$44B global leader in electrical products including building systems (elevators, HVAC), energy systems (power generation, photovoltaics), space systems (satellites, telescopes), optical systems, factory automation (robots, servo systems, laser processing), transportation systems (automotive and train mechatronics) and visual information systems (arena displays). Researchers at MERL collaborate with MELCO's corporate R&D laboratories, MELCO business units in Japan, Europe and North America, and academic partners around the world to develop technologies that extend the performance envelope of these systems.

MERL has a growing need for technical expertise in state estimation and system identification. Other areas of current research interest include but are not limited to optimal control especially of nonlinear and hybrid systems, model predictive control, and nonlinear dynamical systems. Research applications of advanced controls include factory automation technology (servomotors, laser processing machines), thermofluid systems (variable flow refrigerant HVAC products), automotive and transportation systems (vehicle dynamics control, energy management, railway systems), space systems (trajectory planning and control) and electric power systems. Research projects at MERL typically address industrially-motivated fundamental problems, and involve the development and application of advanced control theory or dynamical systems theory to MELCO products resulting in new technology that is transferred to the corporate R&D laboratories for subsequent product development. MERL is an open laboratory that intends to publish all of its research once appropriate patents are secured and technologies are transferred.

Responsibilities for this position include:

- Conducting innovative and relevant research in modeling & control of mechatronic systems,
- Solving challenging controls problems in partnership with corporate R&D laboratories in Japan,
- Transferring results and technology to Mitsubishi Electric corporate research laboratories,
- Publishing results in leading technical journals, conferences, and in patent applications, and
- Drafting project proposals and leading research projects.

The successful candidate will bring an independent research agenda, a track record commensurate with experience and be willing and able to work within interdisciplinary R&D teams. Technical experience and interests must include control system design and analysis, control system implementation in hardware and software and strong experimental skills. Candidates with expertise with state estimation techniques and/or system identification are of particular interest. Model predictive control theory and algorithms are also of particular interest. Candidates experienced with modeling and control of transportation systems (automotive or railway) and/or thermofluid systems will be given preference.

Qualifications for this position are:

- A Ph.D. from an internationally-recognized institution in controls or related discipline,
- A strong publication record consistent with experience,
- A record for independently proposing and executing research projects leading to publication,
- Extensive knowledge of control theory, especially estimation & system identification methods,
- Experience and interest in experimentally implementing control systems in hardware and software,
- Strong teamwork, communication, listening and teaching skills.

Interested parties should contact Dr. Scott A. Bortoff, Group Manager, Mechatronics (bortoff@merl.com).
MERL is an Equal Opportunity Employer.