Research Associate in Mechanical Engineering (MS or
PhD) - Condition Monitoring and Computer Vision
University of Massachusetts Lowell

Job Title	Research Associate in Mechanical Engineering (MS or PhD) - Condition Monitoring and Computer Vision
Department	Mechanical & Industrial Engineering
Institution	University of Massachusetts Lowell
	Lowell, Massachusetts
Date Posted	Mar. 6, 2025
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Research Scientist/Associate
Academic Field(s)	Mechanical Engineering
	Electrical and/or Electronics
	Computer Engineering
	Computer Science
Apply Online Here	https://careers.pageuppeople.com/822/lowell/en-us/job/526596/research-associate-in-mechanical-engineering-ms-or-phd-condition-monitoring-and-computer-vision
Apply By Email	
Job Description	

The Research Associate in Mechanical Engineering (MS or PhD) – Condition Monitoring and
Computer Vision, will conduct analytical and experimental research in the areas of Nondestructive
evaluation and Condition Monitoring with an emphasis on the development of computer vision and
machine learning-enhanced techniques for damage detection, data acquisition, and system monitoring
for energy systems (e.g., wind, solar, hydrogen). The successful candidate will also assist in writing

scholarly articles and research proposals, help to manage and educate graduate or undergraduate students, and assist in the successful operation of the laboratories and facilities. The initial appointment will be for 1 year with the possibility of renewal based on productivity and performance and the availability of funding.

Essential Job Duties:

1. Conduct analytical and experimental research under the supervision of the Principal Investigator (PI). This specifically involves:

- Acquire data of targeted structures using unmanned aerial vehicles embedding different sensors such as RGB, RGB_D, and infrared cameras, LiDAR scanners, etc. Develop appropriate image processing algorithms and approaches to analyze the collected datasets.
- Conduct research related to differing environmental conditions and operations of the installed energy storage and power generation system.
- Develop a supervisory control and data acquisition (SCADA) system for monitoring and control of energy systems.
- Develop appropriate machine learning algorithms and models to automate the detection of damage in the collected datasets.
- Ensuring all project-related activities are conducted on time and to the highest standard.
- Prepare status reports and deliverables in collaboration with and under the direction of the PI.
- Serve as a liaison between PI and collaborating research partners.

2. Assist supervisor in writing scholarly articles and proposals for grant funding.

- The successful candidate will be expected to publish at least two articles per year in peer-reviewed scientific journals based on the research conducted. Papers and presentations in scientific conferences will also be required. Development of patentable technologies over the course of the project will also be encouraged.
- The successful candidate will be expected to initiate and assist in the formulation and writing of externally funded research proposals. This effort will include finding appropriate opportunities, finding collaborative partners, generating preliminary data, and proposal writing/submission.
- Assist in preparing programmatic reports and making presentations to the sponsor/funding agencies.

3. Attend Meetings related to the research projects.

- Conduct weekly meetings between PI, Co-PI, and other group members (e.g., other Post-docs, graduate students, undergraduate students).

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- Disseminate knowledge by attending technical meetings and conferences nationally and internationally when required

4. Supervision of Undergraduate and Graduate Students:

- Meet weekly with each student to review their research project, progress, and papers and to develop a path forward.
- Provide mentorship or training to graduate and undergraduate students involved in the project.

Minimum Qualifications (Required)

Education:

- MS or PhD in Mechanical Engineering, Industrial/Systems Engineering, Civil Engineering, Electrical Engineering, Computer Engineering/Science, Physics, Applied Physics, Chemistry, or related scientific degree.

Experience:

- Minimum four years of experience (including MS and/or PhD. research experience) in research related to structural health monitoring and image processing, data acquisition, signal processing, and experience in conducting analytical research, experimental planning and testing in laboratory environments.

Skills:

- Ability to work as a team player
- Outstanding technical report writing and communication skills
- Experience in the development of computer algorithms and models for monitoring and control of mechanical, electrical and energy systems and physical parameters, as well as a computer vision and machine learning algorithms and models for structural health monitoring/nondestructive evaluation.
- Knowledge of image segmentation, detection, classification, and automated detection techniques
- Familiarity with nondestructive evaluation techniques for the detection of geometry and damage, such as digital image correlation, infrared thermography, LiDAR, ultrasonic imaging, or other relevant methods

Preferred Qualifications:

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- Publications in the field of structural health monitoring, nondestructive evaluation, and image/signal processing
- Experience in computer code/software development (e.g., MATLAB, Python, C/C++, or similar)
- Proficiency with operation of computers, programming languages, and Microsoft Office Suite
- Excellent Communication skills: E-mail, verbal, written, oral presentations, highly responsive
- Ability to work independently, with limited direction, as well as within a team environment
- Ability to mentor and inspire students with limited research experience

Special Instructions to Applicants:

Only current UML Employees within the Grants & Contracts (MTA/GRACE) bargaining unit will be considered during the first 10 business days of the posting. All other candidates will be considered after that period.

This is a Grants & Contracts (MTA/GRACE) Union position, Grade P16.

Initial review of applications will begin immediately and continue until the position is filled. However, the position may close when an adequate number of qualified applications is received.

This position is contingent upon funding. The initial appointment will be for 1 year with the possibility of renewal based on productivity and performance and the availability of funding.

Please include a resume and cover letter with your application. Names and contact information of three references will be required during the application process.

EEO/AA Policy

The University of Massachusetts Lowell is an Equal Opportunity/Affirmative Action, Title IX employer. All qualified applicants will receive consideration for employment without regard to race, sex, color, religion, national origin, ancestry, age over 40, protected veteran status, disability, sexual orientation, gender identity/expression, marital status, or other protected class.

Contact Information

Research Associate in Mechanical Engineering (MS or PhD) - Condition Monitoring and Computer Vision
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Contact

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