

**Manufacturing Futures Initiative (MFI) Postdoctoral Fellowship Program**

# **About the MFI Postdoctoral Fellowship Program**

The MFI Postdoctoral Fellowship Program seeks candidates that will support the vision of MFI by demonstrating leadership in advanced manufacturing technologies, artificial intelligence, integrated design and entrepreneurship, the science of learning, technology policy, and addressing challenges that cross multiple disciplines.

Proposed research must demonstrate a clear fit with the mission and areas of academic inquiry and translational opportunity of MFI. Both internal and external applicants will be considered. **Applicants will need** **confirmed commitment from a CMU faculty mentor** to be considered. Fellowship appointments will be for one year with the option for renewal, subject to annual review and consideration.

# **About MFI and Carnegie Mellon University**

Carnegie Mellon University’s [Manufacturing Futures Initiative (MFI)](https://engineering.cmu.edu/mfi/index.html) is a campus-wide initiative that seeks to support multidisciplinary research that will enable the digitalization of manufacturing and enhance the requisite human workforce through integration of advanced cyberinformation technologies, including, but not limited to, augmented reality, artificial intelligence, cloud computing, cybersecurity, data analytics, internet-of-things, machine learning, simulation and virtual modeling. The appropriate infusion of these modern-era information technologies into manufacturing environments holds the potential to create new paradigms and policies when merged with advanced manufacturing technologies such as additive manufacturing, robotics and automation, micro/nanofabrication, and modular processing. Cutting across the advanced manufacturing landscape is the infusion of learning science to accelerate workforce development, technology-based policy to accelerate adoption, and ethics to provide a compass toward the future. MFI also seeks to support projects that incorporate these areas of social sciences to applications in the digitalization of manufacturing as appropriate. This initiative aims for Carnegie Mellon to lead in integrative multidisciplinary technology innovation to address the high-impact opportunities and associated challenges facing manufacturing.

MFI creates a highly collaborative advanced manufacturing ecosystem that:

* Connects multidisciplinary expertise tapping into CMU’s strengths in advanced manufacturing,
* Fosters research thrusts, including advanced workforce training methodologies, that attract federal funding by raising awareness and providing support for new opportunities,
* Builds partnerships with stakeholders at the regional and national level,
* Generates high-impact research results with national visibility,
* Catalyzes robust activity, regionally, in Hazelwood Green Mill 19,
* Identifies critical needs for strategic growth in the region and informs policy, and
* Accelerates translation of research into commercialization through industry sponsored research, startup generation and support, and technology licensing.

**Why Carnegie Mellon:** Fields pioneered at Carnegie Mellon – additive manufacturing, smart polymers, robotics, and the Internet of things – are among the key technologies transforming production and the future of products. Today, CMU faculty are discovering new advanced-material-based products from self-assembled cellular systems to non-toxic energy generation and storage, to micro-energetic macro-actuators. CMU is a global leader in computer science, boasting nine Turing Award winning-faculty, plus three alumni, having defined the field of machine learning, and having the only machine learning department in the world. CMU has also led the world in computational tools in design, innovation and entrepreneurship: Integrated Product Development set the standard for courses of its kind, and Quantitative Entrepreneurship is one-of-a-kind in its methods. CMU’s company spin-out rate is the highest of any U.S. academic institution per federal research dollar invested, with half of CMU spinouts in manufacturing. CMU’s Robotics Institute, founded in 1979, is the leading robotics research institute in the world. Launched in 2015, CMU’s NextManufacturing Center is a recognized leader in additive manufacturing research and education. The NextManufacturing Center attracted the engagement and support of over 20 organizations via its consortium and many more through other partnership opportunities. CMU’s Simon Initiative has been transforming education through the science of learning. Finally, CMU is the leader in solving policy problems where the technical details matter. This world leadership in advanced manufacturing technologies, artificial intelligence, integrated design and entrepreneurship, the science of learning, and technology policy, coupled with CMU’s unparalleled ability to work problems at disciplinary boundaries, and the generous capital and infrastructure investment of a private donor, are enabling CMU to envision and accelerate the world into the physical and artificial future unlike any other.

# **Eligibility**

* Completion of PhD or ScD prior to start date
* No more than two years past the date of the doctoral degree at the time of appointment
* Internal and external candidates will be considered

# **Application**

Applicants are required to submit the following materials. Applications will be judged on the qualifications of the applicant, and the quality and applicability of the proposed research to the mission and goals of the Manufacturing Futures Initiative and its potential impact.

* Thesis abstract – one page
* Research proposal – 700-1,000 words (not including references and citations). Research proposals must be aligned with the mission and research thrusts of MFI. Proposals should be of high overall technical quality and represent novel, interdisciplinary research. Submissions should also convey the impact of the proposed research, including, as applicable, social, economic, policy, and regional impact as well as the potential of the research to generate additional funding.
* Education and background statement – 500-700 words describing your personal background and contributions to advanced manufacturing through your academic career
* Curriculum vitae including publication list
* Two letters of recommendation including one from the applicant’s PhD thesis advisor, to be sent directly to [CMU-MFI@andrew.cmu.edu](mailto:CMU-MFI@andrew.cmu.edu), that provide detailed assessments of the applicant’s qualifications and potential for innovative, ground-breaking independent research
* Letter of support from the CMU faculty mentor who will advise you during your fellowship appointment addressing:
  + applicant’s planned research
  + extent to which the applicant will participate in department and campus activities and programs
  + facilities and resources available to the fellow
  + statement confirming that the faculty mentor’s department chair supports the items above

NOTE: Applicants are encouraged to contact [faculty currently funded through MFI](https://engineering.cmu.edu/mfi/people.html) as well as faculty with research interests that could support MFI.

# **Tenure**

The tenure of the postdoctoral fellowship will be no less than 9 months and no more than 12 months. Postdoctoral fellowships may not be deferred or delayed. Appointments may be renewed, subject to annual review and consideration.

# **Stipend and Benefits**

* One-year stipend: $60,000
* Carnegie Mellon University full-time staff benefits
* $10,000 will be provided annually for discretionary research expenses including travel

# **Submission Procedure**

* Due date – applications will be accepted on a rolling basis. Due to budget considerations, there may be a limited number of postdoctoral fellowships available at any given time.
* Submission process – application materials must be submitted via the [CMU MFI Postdoctoral Program online application form](https://form.jotform.com/73526741086157).
* Two letters of recommendation including one from the applicant’s PhD thesis advisor, to be sent directly to [CMU-MFI@andrew.cmu.edu](mailto:CMU-MFI@andrew.cmu.edu).
* Candidates will be notified of a decision within 30 days of receipt of their complete application.
* Formal acceptance of the fellowship must be made in writing no later than 30 days after an award notification has been made.