

Principal AI Researcher

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We have an opening for a principal researcher in the Autodesk AI Lab!



The Team

The Autodesk AI Lab is part of the AI & Robotics group at Autodesk, a rapidly growing team of over 20 researchers and engineers heading up Autodesk's work in AI, Computational Science and Robotics. This position is based at our scenic Pier-9 AI Lab, on the water next to the Exploratorium in San Francisco.

The Opportunity

You will be a senior researcher focusing on problems related to geometry understanding, manipulation and synthesis.

Our AI Labs focus on research in: **deep learning, control systems, simulation and knowledge representation** applied to diverse areas such as: **geometry, robotics, advanced sensing, design exploration and sustainable engineering or construction practices**. The labs also host product engineers resulting in early productization of our research, so you can see your work in action.

A sampling of AI Lab projects:

- BrickBot – <https://www.fastcompany.com/90204615/autodesks-lego-model-building-robot-is-the-future-of-manufacturing>
- Auto Sketching and Vectorization – <https://canvasdrawer.autodeskresearch.com/>
- Topology Optimization for Specific Manufacturing Processes – <https://www.autodesk.com/customer-stories/general-motors-generative-design>

Job Requirements

A successful candidate should have the following:

- An MS or PhD in a field related to Machine Learning such as: Computer Science, Mathematics, Statistics or Physics
- Significant doctoral or post-doctoral research experience or 5 or greater years of work experience
- Solid theoretical background in geometry and geometric methods. e.g. shape analysis, topology, differential geometry, discrete geometry, functional mapping, etc.

- Good background in statistical methods for Machine Learning. e.g. Bayesian methods, HMMs, Graphical Models, dimensional reduction, clustering, classification, regression techniques, etc.
- Familiarity with Deep Learning techniques. e.g. Network architectures; regularization techniques; learning techniques; loss-functions; optimization strategies; etc.
- Familiarity with one or more typical deep learning frameworks: TensorFlow, Caffe, MxNet, TORCH, Chainer, etc.
- Strong coding abilities in: Python and C/C++
- Good communication skills and an awareness of how to communicate data and results effectively
- Comfortable working in newly forming ambiguous areas where learning and adaptability are key skills
- At times, the ability to lead and rally stakeholders and team members

Preferred Qualifications & Experience

Experience in some of the below areas would also be beneficial:

- Reinforcement Learning and other areas of Control Theory
- Distributed Systems and High Performance Computing methods
- Advanced simulation methods such as: FEA, CFD, Shape and Design Optimization, Photo-Realistic Rendering, etc.
- Knowledge Representation (semantic models, graph databases, etc.)

About the AI Lab

Autodesk is the ideal environment for applying advanced Machine Learning techniques to: learn from an incredibly rich world of data; predict and synthesize solutions typically beyond human abilities; and create new levels of automation in how things are physically built. Given the broad variety of AI problems faced by Autodesk and our clients, we created a centralized facility to concentrate the research and engineering work behind these solutions ... **The Autodesk AI Lab**. The Lab brings together AI Researchers, Software Engineers and specialists in various problem areas to create novel AI solutions in all the areas mentioned above and more. They work closely with experts in: geometric modeling, simulation systems, robotics, knowledge representation, sensing and computer vision, industrial manufacturing and construction techniques.

The AI Lab works with both product teams and customers to realize these AI solutions, getting access to massive data streams and seeing our AI models come to life in the field!

Responsibilities

As a **Principal AI Researcher** in the **Autodesk AI Lab** you will have a range of responsibilities including:

- Exploring and developing new Machine Learning models and techniques
- Constantly reviewing relevant Machine Learning literature to identify emerging methods or technologies and current best practices
- Introduce creative approaches to research topics and generates new approaches, perspectives and solutions to research topics
- Planning and designing research projects: specifying the problem and defining the project scope.
- Connecting with academics and institutions to build relationships and collaborate
- Realizing solutions through prototypes
- Exploring new data sources and discovering techniques for best leveraging data
- Collecting and performing data analysis to validate and further new theories and discoveries
- Publishing and talking at conferences
- Working closely with product engineers to design, develop and incorporate AI solutions into new products
- Meeting with customers to understand how ML could be applied to their problems
- Thinking strategically about research directions
- Mentoring more junior researchers and engineers

Description

The work we do at Autodesk gets to touch nearly every person on the planet. By building tools for designing buildings, developing machines and even the latest movie, we get to influence and empower some of the most creative people in the world to solve problems that matter. We love that very often these are solutions to some of the most pressing issues the world faces: housing more people, reducing impact on our environment, and dramatically reducing illness and death in developing parts of the world.

In serving these customers, we get to tap into and realize the potential of the rich streams of data from those worlds. Perhaps it's real-time sensor data from cars or 3D scans of buildings as they are being constructed. In other cases, it's about learning the language of 3D modeling from watching designers and then training the future intelligent design tools to make design more accessible. Or, it's about automating and refining how things are physically made in the world, through advanced robotics, other times through controlling 3D printers or sophisticated milling machines.

This is the ideal environment for applying advanced Machine Learning techniques to: learn from an incredibly rich world of data; predict and synthesize solutions typically beyond human

abilities; and to create new levels of automation in how things are physically built. Given the broad variety of AI problems faced by Autodesk we created a centralized facility to concentrate the research and engineering work behind these solutions ... **The Autodesk AI Lab**. The Lab brings together AI Researchers, Software Engineers and specialists in various problem areas to create novel AI solutions in all the areas mentioned above and more. They work closely with experts in: geometric modeling, simulation systems, robotics, knowledge representation, sensing and computer vision, industrial manufacturing and construction techniques.

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