

Benjamin Jenett CV

bej@mit.edu (949) 338-0569

Updated 03/2019

Personal/academic website: <https://bej.pages.cba.mit.edu/personal/>

Statement: I am interested in designing and prototyping high performance material systems, robotic platforms for their construction, and novel applications in fields such as transportation, aviation, and aerospace.

Education

Massachusetts Institute of Technology

Doctor of Philosophy - Media Arts and Sciences 2015-present

Center for Bits and Atoms Research Group (<http://cba.mit.edu/>), Director: Neil Gershenfeld

Thesis Title: "Relative Robotic Assembly of Discrete Cellular Structures"

Video (not for distribution): https://bej.pages.cba.mit.edu/personal/jenett_relative_robots_IROS2019.mp4

Expected Graduation May 2020

Masters of Science - Civil Engineering 2013-2015

Thesis Title: Digital Material Aerospace Structures

<https://dspace.mit.edu/handle/1721.1/101837>

TU Delft 2011-2012

Fellowship Research – Department of Civil Engineering

Focus on deployable structures and shell/membrane mechanics

UC Berkeley

Bachelors of Architecture 2003-2007

Awards

NASA Pathways Intern Program present

Ames Research Center, Intelligent Systems Division

NASA Space Technology Research Fellowship (NSTRF) 2014-2018

Academic funding for research of on-orbit robotic assembly of space structures.

Work

Nous Engineering - Engineer 2012-2013

Structural engineering for buildings and architectural installations

Simulation using various FEA packages, calculation of member/connection design

Ball Nagues Studio - Project Manager 2009-2012

Large-scale, computationally designed art installations

CAD/CAM of various wood/steel/composite structures

Focus on novel fastening/material systems for ease of on-site installation

Lundberg Design - Designer/Fabricator 2008-2009

Machining/Fabrication of custom architectural features (wood, aluminum, steel, glass)

Skills

Hardware

Manufacturing: Injection mold prototyping; CNC (5/3 axis mill, lathe, waterjet, laser, EDM, Zund); fiber composite molding; most commercial additive manufacturing, materials testing/characterization

Mechatronics: design and fabrication of robotic motion systems including actuation, power, sensors, end effectors, etc.

Software

CAD: Rhino 3D, Solidworks, Fusion 360, some CATIA

FEA: ANSYS, Abaqus, Oasys GSA, native CAD simulation environments

Programming: some Python for data processing/simulation, Javascript for custom workflows, C/C++/Arduino for robotics

Publications

Elastic Shape Morphing of Ultralight Structures by Programmable Assembly, N. Cramer, D. Cellucci, O. Formoso, C. Gregg, B. Jenett, J. Kim, M. Lendraitis, S. Sweij, G. Trinh, K. Trinh, K. Cheung, *Smart Materials and Structures*, (2019).
<https://iopscience.iop.org/article/10.1088/1361-665X/ab0ea2>

Algorithmic Approaches to Reconfigurable Assembly Systems, A. Costa, A. Abdel-Rahman, B. Jenett, N. Gershenfeld, I. Kostitsyna, K. Cheung, *IEEE Aerospace Conference*, (2019).
<http://cba.mit.edu/docs/papers/19.02.algoreconfig.pdf>

Discrete Lattice Material Vacuum Airship, B. Jenett, C. Gregg, and K. Cheung, *AIAA SciTech*, (2019).
<http://cba.mit.edu/docs/papers/19.01.vacuum.pdf>

Building Block-based Assembly of Scalable Metallic Lattices, B. Jenett, N. Gershenfeld, and P. Guerrier, *ASME MSEC*, (2018).
<http://cba.mit.edu/docs/papers/18.06.msec.metal.pdf>

Design of Multifunctional Hierarchical Space Structures, B. Jenett, C. Gregg, D. Cellucci, and K. Cheung, *IEEE Aerospace*, (2017).
<http://cba.mit.edu/docs/papers/17.05.HierarchSpaceStruct.pdf>

BILL-E: Robotic Platform for Locomotion and Manipulation of Lightweight Space Structures, B. Jenett and K.C. Cheung, *Proc. 2017 AIAA SciTech*, (2017).
<http://cba.mit.edu/docs/papers/17.06.scitech.bille.pdf>

A Mobile Robot for Locomotion through a 3D Periodic Lattice Environment, B. Jenett, D. Cellucci, and K.C. Cheung, *Proc. 2017 IEEE International Conference on Robotics and Automation (ICRA)*, (2017).
<http://cba.mit.edu/docs/papers/17.06.icra.mojo.pdf>

Digital Morphing Wing: Active Wing Shaping Concept Using Composite Lattice-Based Cellular Structures, B. Jenett, S. Calisch, D. Cellucci, N. Cramer, N. Gershenfeld, S. Sweij, and K. Cheung, *Soft Robotics*, (2016).
<http://cba.mit.edu/docs/papers/16.11.SoRo.pdf>

Meso-Scale Digital Material: Modular, Reconfigurable, Lattice-Based Structures, Benjamin Jenett, Daniel Cellucci, Christine Gregg, Kenneth Cheung, *Proc. 2016 ASME MSEC* (2016).
<http://cba.mit.edu/docs/papers/16.07.msec.bridge.pdf>