



Jonathan D. Blutinger

Curriculum Vitae (April 2023)

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EDUCATION AND APPOINTMENTS

Food Robotics Engineer <i>Redefine Meat</i>	Current
Postdoctoral Researcher <i>Columbia University</i> Funding from Redefine Meat	2022-2023
PhD in Mechanical Engineering <i>Columbia University</i> Thesis: "Digital Cuisine: Food Printing and Laser Cooking" Advisor: Hod Lipson	2016-2022
MSE in Integrated Product Design <i>University of Pennsylvania</i> "Pineapple: Redesigning the luxury packaging experience" Thesis advisor: Mark Yim	2013-2015
BSE in Mechanical Engineering & Applied Mechanics <i>University of Pennsylvania</i> Minor: Engineering Entrepreneurship	2010-2015

OTHER WORK EXPERIENCE

Project Manager, Design Engineer <i>Macron Dynamics, Inc.</i> Optimized gantry designs for customer applications, and improved model generation process	2015-2016
Design Engineer <i>Tactai, Inc.</i> Designed modular finger casing which housed electronics and haptic sensing devices	2014-2015
Applications Engineer, CAD/CAM Support <i>PartMaker, Inc. (Acquired by Autodesk)</i> Provided CAM support and developed manufacturing processes for custom parts	2014
Contractor <i>U.S. Army Corps of Engineers</i>	2008-2012

Conducted and analyzed beach surveys and guided public tours through facility

LEADERSHIP AND TEACHING EXPERIENCE

President 2017-2018

Columbia University Mechanical Engineering Graduate Association (MEGA)

Manage Exec board and act as liason between the ME dept. and ME grad student body

Facilitate the planning and execution of social and career events for students (~ 300)

Teaching Assistant 2016-2021

Columbia University

Mechatronics & Embedded Micro (Instructor: Enrico Zordan)

Engineering Design (Instructor: Fred Stolfi)

Computer Graphics and Design (Instructors: Kristin Myers, Sinisa Vukelic, Yevgeniy Yesilevskiy)

Teaching Assistant 2012-2015

University of Pennsylvania

Integrated CAD/CAM/CAE (Instructor: Jonathan Fiene)

Design for Mechatronic Systems (Instructor: Jonathan Fiene)

Machine Design and Manufacturing (Instructor: Jonathan Fiene)

PEER-REVIEWED PUBLICATIONS

7. J. D. Blutinger, C. C. Cooper, S. Karthik, A. Tsai, N. Samarelli, E. Storvick, G. Seymour, E. Liu, Y. Meijers, and H. Lipson, "The future of software-controlled cooking", *npj Science of Food* **7**(6), 1-6 (2023).
6. J. D. Blutinger, A. Tsai, E. Storvick, G. Seymour, E. Liu, N. Samarelli, S. Karthik, Y. Meijers, and H. Lipson, "Precision cooking for printed foods via multi-wavelength lasers", *npj Science of Food* **5**(24), 1-9 (2021).
5. J. D. Blutinger, Y. Meijers, and H. Lipson, "Selective laser broiling of Atlantic salmon", *Food Research International* **120**, 196-208 (2019).
4. J. D. Blutinger, Y. Meijers, P. Y. Chen, C. Zheng, E. Grinspun, and H. Lipson, "Characterization of CO₂ laser browning of dough", *Innovative Food Science & Emerging Technologies* **52**, 145-157 (2019).
3. E. Hertafeld, C. Zhang, Z. Jin, A. Jakub, K. Russell, Y. Lakehal, K. Andreyeva, S. N. Bangalore, J. Mezquita, J. D. Blutinger, and H. Lipson, "Multi-material Three-Dimensional Food Printing with Simultaneous Infrared Cooking", *3D Printing and Additive Manufacturing* **6**(1), (2019).
2. P. Y. Chen, J. D. Blutinger, Y. Meijers, C. Zheng, E. Grinspun, and H. Lipson, "Visual modeling of laser-induced dough browning", *Journal of Food Engineering* **243**, 9-21 (2019).
1. J. D. Blutinger, Y. Meijers, P. Y. Chen, C. Zheng, E. Grinspun, and H. Lipson, "Characterization of dough baked via blue laser", *Journal of Food Engineering* **232**, 56-64 (2018).

Unpublished Papers (In Preparation or Under Review)

1. S. Goldfinger, H. Lipson, and J. D. Blutinger. "Simulating printed food structures", *Materials & Design* (draft)

PATENTS

1. U.S. Patent Application US 2019 0110505A1, “Method and systems for laser-based cooking”.

INVITED PRESENTATIONS AND WORKSHOPS

8. The Digital Chef, WIS Steamfest, 2023
7. Deep Dive: 3D Food Printing, The Spoon, 2023
6. Life4 Talk: The Future of Food is Personalized, Elixir Group, 2022
5. Digital Food, Summer High School Academic Program for Engineers (SHAPE), 2018
4. Baking dough with lasers, SWE Engineering Exploration Experience Workshop, 2018
3. Food Printing & Laser Cooking, New Frontiers in Robotics, Columbia Technology Ventures, 2017
2. Automation in Food, Pastry Plus Conference, International Culinary Center (ICC), 2017
1. Developing and Delivering Compelling Presentations, University of Rhode Island, 2017

SELECTED PRESS

- **CBS News:** *Columbia University engineers 3D print edible cheesecake*
- **CNN:** *Researchers 3D printed this cheesecake*
- **Axios:** *A new dimension for food security*
- **CNN Tech:** *Inside Columbia’s lab trying to cook food in 3D printers*
- **USA Today:** *Is 3D printing the future of food? Well, if you like cheesecake things are already cooking*
- **The Times:** *3D printing? It’s a piece of (cheese)cake*
- **BBC Reel:** *Can we 3D print our food?*
- **PBS:** *Could the path to a more nutritious pizza be illuminated by laser beams?*
- **FOX 5:** *Robo Chicken: Engineers cook 3D-printed chicken with lasers*
- **RT America:** *The food of the future? Researchers reveal how they cook 3D-printed cuisine using LASERS*
- **Mashable:** *Can software cook food?*
- **CBC radio:** *Set weapons to sauté: Engineers use lasers to cook 3D-printed chicken*
- **WIRED:** *This 3D-Printed Chicken Breast Was Cooked with Frickin’ Lasers*

- **Scientific American:** *3D-Printed Chicken Dinner Cooked by Lasers*
- **Newsweek:** *Engineers 3D-Print Chicken and Cook It with Lasers*
- **Ars Technica:** *Engineers figured out how to cook 3D-printed chicken with lasers*

STUDENTS SUPERVISED

Masters Students

7. Blossom Parris - Machine design and testing (2022-2023)
6. Harjot Singh - Slicer engine optimization (2022)
5. Shravan Karthik - Slicer engine optimization (2019-2020)
4. Noà Samarelli - Hardware and firmware dev (2020-2021)
3. Uttara Ravi - Slicer engine optimization (2021)
2. Wasif Mukaddam - Machine tool design (2021)
1. Kevin Yu - Slicer engine optimization (2022)

Undergraduate Students

23. Steven Cardenas - Machine tool design (2018-2019)
22. Gabriel Seymour - Software dev, closed-loop cooking (2018-2020)
21. Alissa Tsai - Printing and cooking experimentation, component design (2019-2021)
20. Erika Storvick - Printing experimentation (2020)
19. Elise Liu - Printing and cooking experimentation (2018-2019)
18. Cameron Joyner - Frontend UI / UX app design (2020-2021)
17. Winston Zhang - Slicer engine optimization (2020-2021)
16. Brian Ma - Slicer engine optimization (2020)
15. Luna Ruiz - Backend GUI dev, foodCAD (2020)
14. Dahee Kwon - Backend GUI dev, foodCAD (2019)
13. Mary Zaradich - Printing experimentation (2021)
12. Rohin Modi - Printing experimentation (2021)
11. Pol Bernat - Machine tool design (2021)
10. Victor Sanchez - Electronic box design (2021)
9. Avery Blanchard - Slicer engine optimization (2021)
8. David King - Slicer engine optimization (2021)
7. Kallee Gallant - Printing experimentation, ingredient formulation (2021)
6. Caitlyn Chen - Frontend GUI dev, foodCAD (2021)

5. Shir Goldfinger - Simulation design (2021)
4. Yuting Li - Food printing and machine control (2022)
3. Yuan Ding - Food printing and machine control (2022)
2. Samya Ahsan - Steak image processing (2022)
1. Fabio del Prado - Food cartridge design (2022)

REFERENCES

Hod Lipson

Professor

Columbia University

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Katherine Kuchenbecker

Director

Max Planck Institute for Intelligent Systems

Email: kuchenbe@seas.upenn.edu