

# George Sun

STARTUP FOUNDER & PHD, BIOLOGICAL ENGINEERING

New Lab, 19 Morris Ave. Bldg. 128, Brooklyn, NY, 11205

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## Education

### Ph.D. Biological Engineering

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, GPA 4.90/5.00

Cambridge, MA

Aug 2014 - June 2019

### B.S. Biological Engineering and Electrical Engineering & Computer Science

UNIVERSITY OF CALIFORNIA BERKELEY, GPA 3.96/4.00

Berkeley, CA

Aug 2010 - 2014

## Work Experience

### Nextiles, Inc.

CEO

Brooklyn, NY

Jan. 2020 - Present

- Secured >\$1M on non-dilutive grants, pre-seed round, and established a hardware manufacturing space in Brooklyn, NYC.
- Collaborated with several industries in the textile, sports apparel, and medical technologies sectors.
- Led the business strategy and oversaw financials to guide the company into a sustainable and profitable trajectory.

Co-FOUNDER & CTO

June 2019 - Dec 2019

- Tasked with developing new wearable technologies based on fabric-based sensors. Sensors are built to measure force directly from compression/bending of threads.
- Patented 3 unique inventions on the design, manufacturability, and application of fabric-based sensors, all approved by the USPTO.
- Completed programs such as MIT Delta V accelerator, Hubweek Demo Day, NSF I-Corps, and several other pitch and showcase events.

FOUNDER

April 2018 - May 2019

- Founded Nextiles, a startup built on re-thinking wearable technologies through advanced sewing technologies.
- Inspired from past work in electrical engineering and material science, and motivated to merge the two together in unique ways in fabric.

### Design Lab X Puma

LEAD EMBEDDED ENGINEER

Cambridge & Nuremberg

Jan. 2017 - Jan. 2018

- Led a team of engineers and designers with Puma's Innovation Team to redesign and instrument their line of athletic shoes
- Focused on embedding force-sensitive materials into the shoe to track gait and power using machine models.

### Communication Lab, MIT

COMMUNICATION FELLOW & INSTRUCTOR

Cambridge, MA

Jun. 2015 - May. 2019

- Facilitated workshops and seminars on effective communication and scientific presentation.
- Worked with MIT's GEL program and helped teach *Leading Creative Teams* while developing course content for MIT.

## Research Experience

### Biomolecular Materials Group, MIT

PHD, GRADUATE RESEARCHER – BELCHER LAB

Cambridge, MA

Sept. 2014 - June. 2019

- Engineered yeast as a bioremediation agent to consume and recycle heavy metals, particularly from electronics and mining runoff.
- Authored and co-authored several research articles in Nature, with several utility patents emerging from this unique invention.
- Utilized laboratory techniques ranging from material science (ICP, EDX, XRD), molecular biology (PCR, genetic circuits, transformations), chemistry (chromatography, electrochemistry), and analytical tools (matplotlib, scikit-learn, tidyverse).
- Awarded several grants (NSF, Bose, CEHS) and honors for scientific talks and presentations on environmental remediation technologies.

### Molecular Engineering Imaging and Control Group, Berkeley & Caltech

RESEARCH ASSISTANT – SHAPIRO LAB

Berkeley & Pasadena, CA

Jan. 2011 - Aug. 2014

- Conducted research in biomolecular tools such as stem cell therapy and biological contrast agents for medical imaging.
- Independently researched the effects of metallo-enzymes on enhancing the magnetic properties of neurological systems for NMR and MRI.
- Transitioned to Caltech's Chemical Engineering department in the last year of college to finalize research.

### Microfluidics for Point-of-Care Diagnostics Group, Columbia

AMGEN RESEARCH SCHOLAR – SIA LAB

New York, NY

June 2013 - September 2013

- Created new experimental protocols to create PDMS scaffolds for organoid growth.
- Focused on recreating synthetic extracellular matrixes and vasculature for brown fat and hair follicle growth.

# Publications

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## ACADEMIC JOURNALS

Pandit, Shalmalee, **Sun, George L.**, and Angela M. Belcher. "Yeast Platform Technology for Sustainable Production of Industrial Molecules." (2020). *in submission*.

**Sun, George L.**, and Angela M. Belcher. "Engineering supramolecular forming proteins to chelate heavy metals for waste water remediation." (2020). *in submission*.

**Sun, George L.**, Erin E. Reynolds, and Angela M. Belcher. "Using yeast to sustainably remediate and extract heavy metals from waste waters." *Nature Sustainability* (2020): 1-9.

Gilbert, C., Tang, T. C., Ott, W., Dorr, B. A., Shaw, W. M., **Sun, G. L.**, ... & Ellis, T. "Living materials with programmable functionalities grown from engineered microbial co-cultures." *bioRxiv*. (2019).

**Sun, George L.**, Erin E. Reynolds, and Angela M. Belcher. "Designing yeast as plant-like hyperaccumulators for heavy metals." *Nature communications* 10.1 (2019): 1-12.

Shapiro, M. G., Ramirez, R. M., Sperling, L. J., **Sun, G.**, Sun, J., Pines, A., ... & Bajaj, V. S. (2014). "Genetically encoded reporters for hyperpolarized xenon magnetic resonance imaging." *Nature chemistry* 6.7 (2014): 629.

## WEB PUBLICATIONS

**Sun, George L.**. "File Structure". *Mechanical Engineering Communication Lab, MIT*. (2019).

<https://mitcommmlab.mit.edu/meche/commkit/file-structure/>.

McLean, K., Peters J., Ramamoorthy, D., **Sun, G.**, Toth T., Triassi A., Prerna B. "Awesome BECL Resources". *Biological Engineering Communication Lab, MIT*. (2019). <https://github.com/MIT-BECL/awesome-becl-resources>.

**Sun, G.**, Wang, D., Gerarld, K. "Air Guitar". *Instructables*. (2016).

<https://www.instructables.com/id/Air-Guitar/>.

## Patents

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**Sun, George L.**. "Devices for static and dynamic body measurements." US Patent 10,605,680. 31 March 2020.

**Sun, George L.**. "Methods of manufacturing devices for static and dynamic body measurements." US Patent 10,458,866. 29 October 2019.

**Sun, George L.**. "Systems, methods, and devices for static and dynamic body measurements." US Patent 10,378,975. 13 August 2019.

**Sun, George L.**, and Angela M. Belcher. "Engineered yeast as a method for bioremediation." U.S. Patent 15/887,305. 18 August 2018

## Honors & Awards

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2019-Curr **Member**, New Lab – Brooklyn Navy Yard

New York, NY

2019 **Member**, Delta V Accelerator

New York, NY

2019 **Member**, NSF I-Corps Program

Philadelphia, PA

2018-2019 **Recipient**, CEHS Pilot Grant

Cambridge, MA

2016-2019 **Recipient**, Amar G. Bose Research Grant

Cambridge, MA

2014-2019 **Recipient**, NSF Graduate Research Fellowship Program

Cambridge, MA

2011-2014 **Recipient**, IMSD NIH Research Fellow

Berkeley, CA

2010-2014 **Recipient**, Regent & Chancellor Scholarship

Berkeley, CA

## Skills

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<b>Machinery</b>	Solder/Reflow, 2-3DoF CNC, Vinyl Cutters, Laser Cutters, 3D Printing, Molding/Casting, Screen Printing, Vacuum Forming
<b>Digital Fabrication</b>	Eagle PCB, Fusion CAD/CAM, Techpacker, Multimeter/Oscilloscope, TTL/UART/I <sup>2</sup> C/ISP Communication
<b>Administration</b>	Microsoft Suite, GSuite, Airtable, Coda, Slack, Asana, Docsend, Git/hub/lab, GoDaddy, Webflow, Heroku
<b>Programming</b>	AndroidOS (Java), iOS (Swift), Javascript (Node.js), Python (Matplotlib, Numpy, Scipy, Pandas, Scikit-learn, Notebooks), C (AVR firmware), UNIX (bash, awk, grep, sed), GO, LaTeX
<b>DevOps</b>	AWS (EC2, S3, Lambdas, Kinesis, Cognito), GCP (Firebase, Firestore, Authentication), MongoDB Atlas
<b>Back-end</b>	Express, MongoDB, Websockets, BLE Stack, REST, CRUD
<b>Front-end</b>	D3.js, Three.js, Leaflet.js, Gulp, Yeoman, HTML5, JQuery, Bootstrap, SCSS, Jekyll