

## Personal information

Name **Leila Madrone (née Hasan)**  
Address San Francisco, CA  
Email leilabot (at) gmail (dot) com  
Occupation **Renaissance Engineer**

## Work experience

Employer **GreenVolts**, Fremont, CA  
Position and Dates Systems Engineer, January 2008-Present  
Sector Energy  
Responsibilities Systems Engineer for GreenVolts Concentrating Photovoltaic (CPV) systems: complete solar power solutions for commercial to utility scale applications, with higher efficiency and smaller footprint than traditional flat panel solar. From prototype to Beta release, responsibilities in both development and research, including:

- Conducting concentrated photovoltaic system design analysis and determining topology recommendations. Includes design and implementation of extended instrumentation, data acquisition, and data analysis.
- Designing and implementing embedded solar tracker control system (hardware, sensors, firmware). Used for the first GreenVolts solar power plant deployment.
- Project and design lead for custom instrumentation for photovoltaic testing and measurement for unique, precision high power measurements not currently available off-shelf (resulting patent application)
- Developing models for both solar cell level and power plant system analysis.
- Designing custom industrial field communications.
- Determining technical requirements and specifications for hardware, software, and protocols related to solar systems. Interfacing relevant vendors and consultants.

Employer **NASA Ames Research Center**, Moffett Field, CA  
Position and Dates Lead Engineer, February 2006-January 2008  
Sector Robotics and Imaging  
Responsibilities Engineering lead for the GigaPan system, a low cost consumer device for taking high resolution panoramic imagery. Used to promote cultural exchange and create a vibrant online panorama community. See [www.gigapan.org](http://www.gigapan.org) for the public website and [www.gigapansystems.com](http://www.gigapansystems.com) for consumer hardware from resulting startup. From concept to Beta release, responsibilities in design and commercialization of NASA technology, including:

- Determining product requirements and specifications for the electrical and mechanical systems and coordinating with relevant manufacturing partners.
- Implementing the GigaPan embedded control system, including all firmware and user interfaces.
- Managing teams (ranging in size from 2-8) of engineers on GigaPan related applications.
- Interfacing with Google Earth, National Geographic, and the Carnegie Mellon Robotics Institute as part of the Global Connection Project.
- Aiding in the technical, aesthetic, and functional requirements determination for the public website and working extensively with beta-users for design feedback to facilitate content creation for the website.

Employer **Two One Nine Design**, Mountain View, CA  
Position and Dates Consultant, October 2005-February 2006  
Sector Consumer Solar Devices  
Responsibilities

- Designing battery management and analog circuitry for solar powered lighting modules for pedestrian walkways ([www.spotdevices.com](http://www.spotdevices.com)).
- Conducting battery research and developing energy-efficient analog design, including dc/dc conversion, photovoltaic modeling, resource analysis, and battery conditioning.

Employer **Biotrove**, Woburn, MA  
Position and Dates Engineer  
Sector Biotech Instrumentation and Automation  
Dates November 2001- June 2005  
Responsibilities

- Engineering high speed, precision automation and custom instrumentation for low volume/high throughput screening systems for genomics and drug discovery (resulting patent).
- Developing image processing for automated inspection.
- Discovering and implementing novel methods for manipulation of nanovolume fluids (resulting patent).

## Education and training

Dates 2001  
Title of qualification awarded Masters of Engineering  
Principal subjects Electrical Engineering and Computer Science  
Name and type of organisation Massachusetts Institute of Technology, Cambridge, MA

Dates 2000  
Title of qualification awarded Bachelors of Engineering  
Principal subjects Electrical Engineering and Computer Science  
Name and type of organisation Massachusetts Institute of Technology, Cambridge, MA

## Personal skills and competences

- Social skills and competences
- Team Work: very effective at working on cross-functional teams with excellent interpersonal skills.
  - Leadership: Experienced in leadership positions ranging from engineering lead on released products to art and science coordinator of large-scale events. Manager for teams of interns while at NASA and Greenvolts, and acting program manager for control systems team at GreenVolts.
  - Communications: Considered by colleagues to be an enthusiastic and effective communicator
  - Experience with engineering presentations, public talks, and television.
- Organizational skills and competences
- Excellent documentation skills, including technical requirements, product specifications, and detailed design documentation. Highly regarded for ability to bring together scientific requirements across disciplines into a cohesive vision.
- Technical skills and competences
- Extensive experience with solar systems, from device to field level.
  - Extensive experience with control systems, instrumentation, sensors, and data acquisition.
  - Extensive experience in digital and analog circuit design.
  - Extensive experience with industrial automation and electro-mechanical systems.
  - Extensive experience with embedded DSP's and microcontrollers (TI, Microchip, Atmel).
  - Experience with motors, optics, illumination systems, thermal imaging, and thermal materials
- Computer skills and competences
- Extensive experience with embedded programming for MCUs in C and assembly.
  - Competent with simulation and programming in MATLAB and PSPICE.
  - Competent with schematic capture and PCB layout (OrCAD, Altium Designer, DipTrace, Eagle).
  - Competent with mechanical layout (Solidworks) and drawing creation.

## Additional information

- Patents
- (WO/2004/074818) Assay apparatus and method using microfluidic arrays (First Author)
  - (WO/2007/035642) Thermal cyclers for microfluidic array assays (Co-Author)
- Publications
- Hasan, L., Yu, N., Paradiso, J. (2002) "The Termenova: A Hybrid Free-Gesture Interface" in the proceedings of New Instruments for Musical Expression (NIME-02), Dublin, Ireland.
- Societies
- IEEE: Power and Energy Society, Society of Women Engineers, Communications Society
- Honours
- Keynote speaker, National Engineers Week, Portland, 2007.
  - Science and Art curator and member of the executive team for Yuri's Night at NASA Ames, 2007 and 2008.
  - Featured engineer on Design Squad, a PBS show for inspiring children to pursue engineering, 2008.
  - Team member on BBC's engineering show, Battle of the Geeks, 2006.
  - Performance at Carnegie Hall, as part of Gamelan Galak Tika, New York City 2005.
  - Grant recipient from LEF, for creation of a MIDI-controlled robot orchestra, 2005.
  - Captain of first all-female team on the TLC show Junkyard Wars, 2001.
  - First place robot in MIT's 6.270 Autonomous Robot Competition, 1998.