# Raymond Jimenez

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SELECTED
WORK
EXPERIENCE

◇ **Head of Engineering**, Esperto Medical                    *January 2021–present*

◇ **Senior Space Lasers Engineer**, SpaceX          *September 2019–January 2021*

· Mission director for a fleet of optical link test satellites. Performed testing along with a skeleton crew; program met all goals.

· Developed electrical systems and implemented/coordinated key software features.

◇ **Satellite Electronics Design Engineer**, Boeing       *June 2019–September 2019*

· *Power Electronics Engineer*: Drove design of a space-targeted high-reliability power supply, bringing it from initial schematic through to PDR.

◇ **Avionics Hardware Engineer**, Phase Four          *October 2017–April 2019*

· *Lead Electronics Engineer*: Oversaw electronics for the ROSE-1 and Maxwell thrusters. Eliminated the company's top three risks for flight by purusing an aggressive design-build-test cycle. Responsible for designs spanning RF power generation, precision analog, and digital control. Prototyped new power and control architectures that demonstrated best-in-class power density and thrust.

◇ **Senior Hardware Dev. Electrical Engineer**, SpaceX    *August 2017–Sept. 2017*

◇ **Hardware Development Electrical Engineer**, "          *July 2013–August 2017*

· *Lead Hardware Engineer for Falcon and Dragon GPS Systems*

  – Redesigned flight-critical GPS receivers, used on the Dragon 2 spacecraft and the next generation Falcon 9 rocket.

  – New design was 10 times smaller with improved integration, testability, and insight. Per-unit cost was reduced by over 50 percent.

  – Coordinated with vehicle-level teams to test prototypes on Falcon 9 launches.

  – Drove design from initial architecture trades through schematic capture, layout, characterization, and qualification.

  – Led a four-person team of software, hardware, and navigation engineers.

· *Valve Driver Responsible Engineer:* Developed key load switching hardware for the Dragon 2 capsule, improving upon previous design density by a factor of four.

· *Video Components Engineer:* Responsible for all video components on Falcon 9 for over ten flights (F9-6 through F9-20).

◇ **Dragon Operator**, SpaceX                    *May 2014–September 2017*

· *Mission Director* (Re-entry and Phasing, CRS-10/11/12 missions)
Operations lead during reentry. Final authority for all decisions during flight. Developed fault recovery plans which significantly reduced mission risk.

· *Mission Director* (Berthed, CRS-8 mission)
Operator-in-command while attached to the International Space Station.

· *Systems Operator* (Launch, CRS-7 and CRS-8 missions)
Responsible for all systems on Dragon (electrical, thermal, propulsion, life support, structural mechanisms). Performed on-orbit reconfiguration and setup.

· *Avionics Systems Operator* (Reentry, CRS-5 mission)

◇ **Research Intern**, Mitsubishi Electric (Ofuna, Japan)          *Jun 2012–Sept 2012*

· Prototyped embeddded graphics algorithms embedded in FPGAs

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SELECTED
WORK
EXPERIENCE

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◇ **Research Intern**, Scherer Nanofabrication Group, Caltech     *Jun 2010–Dec 2012*
  · Designed and taped-out several custom silicon neural probe ASICs
  · Optimized circuits for super-low power usage (100s of μW)
◇ **Senior System Administrator**, Dabney House, Caltech     *Feb 2010–June 2013*
  · Developed a medium-scale (100+ terabytes), easily-expandable storage system using commodity hardware and software
◇ **Research Intern**, Marsden CDS Group, Caltech     *Jun 2009–Aug 2009*
  · Implemented fluid-metric computation software for GPUs using Nvidia CUDA
◇ **Laboratory Intern**, Bellan Plasma Group, Caltech     *Jun 2007–Jun 2009*
  Mentor: Paul Bellan, Professor of Applied Physics
    · Prototyped a pulsed magnetic field system using coils embedded on printed circuit boards, in order to allow quicker iteration on spheromak field configurations. System produced fields of up to 3 Tesla for 100ns.

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EDUCATION

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◇ **California Institute of Technology**, Pasadena, CA     *2009–2013*
  BS, Electrical Engineering          Emphasis on low-level digital and analog design

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SELECTED
INDEPENDENT
PROJECTS

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◇ **Flying and Building Experimental Aircraft**
  · Maintain and fly a 1981 Rutan VariEze as an instrument-rated private pilot.
  · Constructing a Cozy Mk IV four-place composite plane from scratch.
  · Capable of performing medium-complexity composite, avionics, and engine repairs.
◇ **FPGA-based FLAC decoder/player**
  · Developed a fully-integrated hardware FLAC decoding core, embedded AVR core, and peripherals (UART, SD card, DMA), resulting in a stand-alone FLAC player
  · Prototyped a from-scratch 2nd-order 1024x oversampling sigma-delta DAC with 0.1% total harmonic distortion + noise.
◇ **Electrostatic Headphone Amplifier**
  · Prototyped an original design for high-voltage (±400V) audio systems
  · First design in the audiophile literature known to apply high-gain global feedback, cancelling output buffer component variance
  · Low distortion ($< 0.05\%$) and high frequency response (0–1MHz, ±2dB)
◇ **Nuclear Fusion (Farnsworth Fusor)**
  · Successfully performed deuterium-deuterium fusion, produced neutrons
  · Built the vacuum system and high voltage (>20kV) equipment from scratch
  · Published a book, *Amateur Nuclear Fusion*, ISBN: 978-0-9791847-2-7, available via Amazon, which documents my experience
  · Documentation and photos available at `http://fusion.wsyntax.com`.

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ASSORTED
SKILLS

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◇ **Operating Systems**: Linux/FreeBSD system administration
◇ **Computer Languages**: Proficient in Python, C, Haskell; familiar with VHDL, LabView, LaTeX, JavaScript (node.js, jQuery), bash, regexes
◇ **Miscellaneous**: Scientific glassblowing, intermediate spoken Japanese, enemble taiko drumming, unicycling

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