

Lukas José Ferrer

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ABOUT ME

I studied Bio, EE, and AI to see neurons from all three perspectives. My initial work on electrophysiology, medical devices, and VR gave me experience bringing research into reality. As a self taught programmer, I now focus on Deep NLP applied towards Information Retrieval Systems.

EDUCATION

M.S. BIOMEDICAL ENG. USC | VITERBI

August 2017 | Los Angeles, CA
Focus: Electrophysiology,
Medical Signal Processing,
& Agile Software Development

B.S. BIOMEDICAL ENG. USC | Viterbi

May 2016 | Los Angeles, CA
Focus: Medical Devices
& Physiological Modeling

TOOLS

PYTHON

PyTorch | FastAI
TensorFlow | Keras
TensorBoard
Numpy
SpaCy
Faiss
REST | Requests

SOFTWARE

Linux | Ubuntu | CentOS
Amazon Web Services
Docker
MATLAB
LabVIEW
SolidWorks

LINKS

LinkedIn || [lukas-ferrer](#)
Live Demo || [ResearchTool](#)
Backend || [DIG-Text-Similarity-Search](#)
GitHub || [Ljferrer](#)

EXPERIENCE

INFORMATION SCIENCES INSTITUTE | RESEARCH PROGRAMMER

May 2018 – Present | Marina del Rey, CA

- **SARAL** – Currently working on machine translation for low resource languages
- Exploring and adapting the Transformer architecture and training scheme to maximize learning with a modest number of parallel text examples
- Operationalizing our models to fit into the larger SARAL pipeline i.e. Audio/Text Database → ASR → NMT → IR → Summarization → User
- **SAGE** – Implemented the backend of SAGE's in-house **Research Tool**, a news database that uses sentence embeddings made with TensorFlow, finds nearest neighboring hits with Faiss, and is deployed as a Restful API
- Set up an automated ingestion pipeline that continuously updates SAGE's searchable index with 100,000+ news articles per day from LexisNexis

KECK RADIOMICS LAB | VOLUNTEER RESEARCHER

Oct 2016 – Nov 2017 | Los Angeles, CA

- Analyzed spectral and texture features of CT images with a particular focus on boundary conditions for tissue segmentation in a HIPAA compliant setting
- Characterized the statistical variance of images across different CT machines

BRAIN-MONITORING DEFIBRILLATOR | FINAL PROJECT

Sept 2016 – Dec 2016 | USC BME 620

- Proposed the design of an implantable Class III medical device that monitors brain activity to accurately determine when a patient with extreme cardiovascular risk is in need of defibrillation
- Identified a less invasive alternative to increase the patient's quality of life and charted *this* hypothetical path to market through the FDA instead

RECALL VR | CREATOR AND TEAM LEAD

Aug 2015 – May 2016 | USC GamePipe Lab

- Envisioned and pursued the creation of an experimental, Virtual Reality learning accelerator designed to leverage a student's natural spatial awareness to increase memory retention (sometimes called The Memory Palace Technique)
- Led 16+ students with skill sets ranging from architecture and animation to computer science and business under an Agile development framework
- Won 1st place at the 2016 Viterbi Senior Design Expo
- Declined several investment opportunities to create a VR Education startup
- Ultimately, the experience drove me to teach myself Machine Learning & AI

HEMODIALYSIS CATHETER | FINAL PROJECT

May 2015 – Aug 2015 | USC MPTX 513

- Designed a novel Class II implantable medical device for a faux-510(k) to simulate the process of obtaining FDA clearance to market

SYNTOUCH | ROBOTICS INTERN

Feb 2014 – Nov 2014 | Los Angeles, CA

- Fabricated a robotic test fixture to explore alternative applications of SynTouch's new tactile sensor, the NumaTac
- Reported weekly progress at the Medical Device Development & Fabrication Lab at USC under the direction of Dr. Gerald E. Loeb