

# Ferdinand Legros

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## Education

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**2016-2018**      **Stanford University, USA**  
Computer Science track, MS in MS&E: 2/3 CS, 1/3 Maths, AI focus. Key Courses: Machine Learning, AI, Deep Learning for NLP, CNNs for Vision - GPA 4.06.

**2013-2016**      **École Polytechnique, Palaiseau, France**  
Leading French university for Science. MS in CS with minor in Entrepreneurship.

**Software skills**      Advanced: *Python, Tensorflow, Java, R, Unix, Matlab, Github.*  
Intermediate: *C++, MySQL, HTML, PHP, Javascript, Ruby Rails.*

## Research

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**Dec17 - Present**      **Speech emotion recognition from audio recordings**  
Stanford Machine Learning Group. Advisor A. Ng. *Tensorflow.*

- Speech features model achieves preliminary result of 51% accuracy for 3 classes.

**Mar17 - Nov17**      **Simulated & real car trajectory prediction from top camera view images**  
Stanford Vision Lab. Advisor S. Savarese. Submitted to **CVPR 2018.** *Tensorflow.*

- Predicts 5s of car motion from 3s past positions and road images with CNN+LSTM.
- Combined Soft and DRAW attention models to extract semantic info. from images.

**Oct16 - Nov17**      **Stanford Univ. Surgery outcome prediction for cerebral palsy patients**  
Hazy Research & Mobilize Center. Advisors S. Delp & C. Ré. *Python, Matlab*

- Developed a Bayesian Network predicting surgery outcome variable, 7% lower error than baseline. Designed a surgery reco. system 8% more precise than clinicians.
- Variable selection w/ Bayes Net. structure learning proved insightful to clinical experts

**Jan17 - Mar17**      **Detecting Articles' For/Against Opinions, FakeNews NLP Challenge**

- Task is to detect if an article Agrees/Disagrees with a given opinion. *Tensorflow*
- Obtained 82.6% accuracy with a bidirectional conditional LSTM with Attention.

**Publications**      **F. Legros, M. Fiterau, J. Hicks, M. Schwartz, and S. Delp.** "Hamstring Surgery Outcome Prediction with Linear Continuous Bayes. Nets", *NIPS 2017 Symposium on Interpretable ML.*  
**A. Sadeghian, F. Legros, M. Voisin, R. Vessel, A. Alahi, S. Savarese.** "CAR-Net: Clairvoyant Attentive Recurrent Network", *Submitted to CVPR 2018*

## Experience

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**Jun17 - Sept17**      **LinkedIn Corp. Discovering root causes for growth performance drops**  
Research Intern in Machine Learning, Relevance Team. *R, Java*

- Highlighted automatically the cause for drops in key metrics, ex: -20% signups.
- Detected deviant attributes -ex: device type- with time series modeling & stat. testing.
- Developed an algo. flagging holidays by multi-metric monitoring & database matching

**Apr16 - Sept16**      **New-York Univ. Event detection in space-time taxi data**  
Research Intern in Machine Learning, advisor J. Freire. *Python, Java, Unix*

- Created a guide to space-time anomaly detection methods from 70+ research papers.
- Experimented with scan statistics & clustering methods, visualization on Google Maps

**Jun15 - Sept15**      **The Boston Consulting Group, France. Pack pricing & food cost study**  
Data Scientist Intern. *R, Powerpoint*

- Built a sales prediction model to study pack sizing impact. Rand forest got ~5% error.

## Leadership and Interests

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- Fall 2017: Teaching Assistant for CS229 Machine Learning, Andrew Ng's course
- Oct15-Feb16: developed Funkevent, a mobile app allowing users to discover amateur events around them.
- 2015: Developed a social literary network website with a classmate. Users can rate and chat about books.
- Oct13-Apr14: Handled emergency life-support and fire rescue situations as a firefighter in Marseille, France.

## Languages

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<b>French:</b>	Mother tongue	<b>English:</b>	Very fluent, former English Teacher
<b>Chinese:</b>	Intermediate	<b>Spanish:</b>	Fluent, 1-month NGO mission in Guatemala