

# Patrick Verga

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## SUMMARY

NLP/machine learning researcher and software engineer.

Focus: deep learning for NLP, automatic knowledge base completion.

## EDUCATION

### UMASS AMHERST

PHD COMPUTER SCIENCE  
May 2017/18 (expected)

MS COMPUTER SCIENCE  
Dec 2014 - 3.6 GPA

BS NEUROSCIENCE  
BA COMPUTER SCIENCE  
Minor Philosophy  
May 2012 - 3.5 GPA

## SKILLS

### LANGUAGES

Java • Scala • Bash  
Python • Lua

### TOOLS

Torch • Unix • SQL •  $\LaTeX$   
git • vim • IntelliJ • Maven

## LINKS

Github:// [patverga](#)  
LinkedIn:// [Patrick Verga](#)

## RESEARCH EXPERIENCE

### INFORMATION EXTRACTION AND SYNTHESIS LAB | RESEARCHER

Feb 2015 – Present | Amherst, MA

- Improved existing latent embedding models for knowledge base population with LSTM RNN (Torch).
- Developed models for jointly embedding multiple languages to a shared space to improve representations for low resource languages.

### CENTER FOR INTELLIGENT INFORMATION RETRIEVAL | RESEARCHER

May 2013 – Feb 2015 | Amherst, MA

- Developed clustering algorithms to efficiently group anonymous classified ads by authorship (Java).
- Participated in the web retrieval track at the TREC 2014 conference using an entity-based query expansion retrieval model (Scala).

### BIO INSPIRED NEURAL/DYNAMIC SYSTEMS LAB | RESEARCHER

May 2011 – May 2013 | Amherst, MA

- Computational neuroscience modeling of reconsolidation in a kernel-based attractor neural network (Matlab).

### HOWARD HUGHES MEDICAL INSTITUTE | RESEARCH INTERN

May 2010 – Aug 2010 | Amherst, MA

- Implemented scripts to detect thalamic-cortical sleep spindles in polysomnography signal data to study the effects of sleep on learning (Matlab).

## SOFTWARE ENGINEERING EXPERIENCE

### TRIP ADVISOR | SOFTWARE ENGINEERING INTERN

May 2013 – Aug 2013 | Newton, MA

- Improved logging to live site in order to collect user data that was previously unavailable to the team (Bash, Java).
- Created scripts for data aggregation (Postgres, Apache Hive).

### SMART PLANT / SENTIMENT ANALYSIS

- Arduino-based “smart” plant monitors moisture and sends alerts when thirsty.
- Built Twitter sentiment analysis model (Python, NumPy, scikit-learn) to re-tweet negative tweets when thirsty, positive after watering.

### ANDROID APP DEVELOPMENT

- Lead the design and implementation working with another developer (Java, Android).
- Number one app for the online game Nation Sates with > 10k downloads.

## SELECTED PUBLICATIONS

- [1] Laura Dietz and Patrick Verga. **UMass at TREC WEB 2014: Entity Query Feature Expansion using Knowledge Base Links.** In *Proceedings of the TREC 2014 Conference*, 2014.
- [2] Dimitri Nowicki, Patrick Verga, and Hava Siegelmann. **Modeling Reconsolidation in Kernel Associative Memory.** *PloS one*, 2013.
- [3] Edward F Pace-Schott, Patrick W Verga, Tobias S Bennett, and Rebecca Spencer. **Sleep promotes consolidation and generalization of extinction learning in simulated exposure therapy for spider fear.** *Journal of psychiatric research*, 2012.