

## **Greg Langmead, Ph.D.**

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### **Qualifications**

- Passionate about building exceptional products
- Successful leader, manager and developer
- Long and successful track record integrating research into products
- Ph.D. in Mathematics and years of practical and theoretical work in computer science, machine learning, and natural language processing
- Energetic contributor to any team of smart and dedicated professionals

### **Education**

Ph.D., Mathematics, Columbia University, May 2001. *Dissertation in topology, geometry and quantum field theory.*

M.Phil., Mathematics, Columbia University, May 1999.

M.A., Mathematics, Columbia University, October 1996.

B.A., Mathematics and Astrophysics, Columbia College, May 1994 (Magna Cum Laude).

### **Work Experience**

#### **Apple Inc., Pittsburgh, PA**

*July 2011 – Present*

#### **Software Engineer, Productivity Applications**

Developed iOS and OS X software for designing and reading multi-touch books. Wrote Objective-C code, performed code reviews, and collaborated with other internal groups through three release cycles including the initial release of multi-touch features in January 2012. Designed and pitched novel features and filed one patent application.

#### **SDL Language Technologies, Los Angeles, CA**

*(formerly Language Weaver, Inc.)*

*October 2004 – July 2011*

#### **Manager, Core Workflows**

*December 2010 – present*

#### **Senior Research Scientist**

*January 2010 – present*

**Research Scientist***July 2005 – January 2010***Senior Data Engineer***October 2004 – July 2005*

Led the development of the core learning workflows that underpin SDL's statistical machine translation product line. Provided leadership and vision for six years, transforming the workflow from an academic research project to an internally-facing product. Grew a team of five direct reports and several collaborators with an exciting and engaged group culture and consistently high achievement in an Agile development framework. Successfully implemented a strategy of continuous integration of new research, enabling rapid commercialization in the cutting-edge field of machine translation. Contributed key innovations to enable complete parallelization of every component. Created a novel meta-workflow platform to unify heterogeneous internal processes, increasing operational efficiency, and permitting rapid integration of new capabilities. Built and maintained a close relationship with IT to integrate decision-making concerning workflow software with the management of operating systems and capital investments in new hardware.

Made original contributions to the field of statistical machine translation in the areas of parallel processing, domain adaptation, decoding with synchronous context-free grammars and integrated language models, integration of statistical and rule-based components, and named-entity translation. Co-authored academic conference papers.

Managed and led Professional Services department through an important transition from manual, error-prone processes to repeatable, scalable and automated ones. Formed and maintained an interdepartmental collaboration to gather requirements from Services group and implement them rapidly in the workflow software.

Served as Principal Investigator for several government projects.

**Center for Communications Research, Princeton, NJ****Adjunct Research Staff Member***June–August 2004*

Invited to join the Summer Conference on Applied Mathematical Problems. Performed classified research in cryptology. Successfully combined mathematical research and software engineering in a highly collaborative environment.

**Design Science, Inc., Long Beach, CA****Product Manager***June 2001 – October 2004*

Managed the release of three mathematical expression typesetting products for Macintosh. Team

included myself and three other developers. Served as liaison with the Microsoft Office for Mac team.

## Publications

[SCFG Decoding without Binarization](#), M. Hopkins, G. Langmead, Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP), Cambridge, MA, 2010

[Cube Pruning as Heuristic Search](#), M. Hopkins, G. Langmead, Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP), Singapore, 2009

[Task parallelization in a text-to-text system](#), G. Langmead, K. Yamada, K. Knight, D. Marcu, US patent 7,389,222, to Language Weaver, Inc., Patent and Trademark Office, 2008.

[Adapter for allowing both online and offline training of a text to text system](#), K. Yamada, K. Knight, G. Langmead, US patent 7,624,020, to Language Weaver, Inc., Patent and Trademark Office, 2009.

[A Supersymmetric Quantum Field Theory Formulation of the Donaldson Polynomial Invariants](#), G. Langmead, Ph.D. dissertation.

## Talks

*Cube Pruning as Heuristic Search*, Machine Translation Seminar, Carnegie Mellon University, April 2010.

*Super-algebra and 'physical mathematics'*, invited talk delivered at the Center for Communications Research, Princeton, NJ, October 2003.

*A supersymmetric field theory construction of the Donaldson invariants*, Columbia University Geometric Topology seminar, April 2001.

*Renormalization*, a ten-hour course in five lectures, Columbia University Mathematics Department, Fall 1999.

## Other Information

Active Top Secret clearance, granted March 2004.