

Pradheep Elango

171 Sherland Avenue, Mountain View, CA 94043
Phone: 608-335-2956 E-Mail: pradheep.elango@yahoo.com

Summary

- Applied researcher, engineer and technical leader with strong expertise in recommender systems, large-scale data mining & machine learning techniques. Excellent programming and analytical skills.
- Adept at leading and executing innovative, cross-organizational projects in fast-paced environments. Strong communication and interpersonal skills.
- Track record of deploying advanced solutions for key scientific problems in Yahoo! products. Authored multiple patents and publications.
- Core technical member of founding team for Yahoo's content optimization initiative.
- *Areas of Expertise:* Data mining, machine learning, statistical modeling, recommender systems, personalization, large-scale data analysis, A/B testing, simulations, prototyping, software/system design.
- *Languages:* C/C++, Java, Perl, R, Pig, Hadoop (map reduce), MySQL, HTML, Matlab

Professional Experience

Technical Lead/Manager, Content Optimization & Recommendation Science, Yahoo! Labs Aug 2010 - current

- *Personalized recommendations:* Work on designing ranking functions, research and development of features for recommending content from *large and dynamic* content pools that is personally relevant for each user. Work on techniques for constructing deep user profiles based on activity on Y! sites. Applications include modules on Yahoo Front Page, Yahoo news, My Yahoo and IntoNow TV show recommendations. Deployed models to production that improved user engagement *more than 4x* over previous approach. Currently focused on continual improvements towards delivering personally relevant content.
- *Optimizing multiple objectives:* Worked on formulating objectives, and methods and system to optimize for multiple objectives simultaneously. Significant efforts on project management and designing an efficient system to integrate objectives that arise from advertising systems along with user engagement. Technical work received *best technical paper* in an internal conference (Techpulse 2011), also published at KDD 2011 and patented.
- Lead an R & D team of applied scientists and engineers. Also contribute individually on projects.
- Drive roadmap for research and development of features/signals, modeling and ranking algorithm improvements, and craft best practices. Work with product and engineering teams closely to A/B test and deploy algorithms in production.

Technical Lead/Sr. Research Engineer, Audience Science, Yahoo! Labs

Sep 2008 - Aug 2010

- *Personalized recommendations:* Worked on personalized article recommendation on small, dynamic content pools. Built framework for lab experimentation, experimented with different models and conducted feature research & development; A/B tested and deployed best performing models to production. Solutions power several Yahoo! sites including the Today Module on the Yahoo Front Page, significantly improving engagement (*more than 2.5x*) over previous method. Some of the technical work published in KDD 2010.
- *Bot detection on Yahoo! websites:* Led a small team for building features and models for detecting bots based on suspicious activity patterns. Built tools for analysis and visualization of data, including a prototype to collect editorial judgments. Worked with product and engineering to deploy models in production. Solution significantly improved accuracy and scientific rigor over previous method, currently applied in production.
- *User Reputation:* Collected and analyzed comments rating data from users on Y! news comments. Investigated different methods for building topic-based reputation models for users. Supervised an intern, work published in internal conference.
- *Recommendation of friends to follow:* Collected data and analyzed models for recommending friends to follow on Yahoo! Pulse based on IM activity graph, mail contacts & usage.

Research Engineer, Audience Science, Yahoo! Labs**Aug 2007 – Sep 2008**

- Core technical member of founding team for Yahoo's Content Optimization project. Developed initial lab experimentation infrastructure implemented algorithms in production. Research, development and deployment in a startup-like environment. Key problems I worked on, in this context:
 - Time-series models: Implemented and analyzed various time series models to track click-through rates of individual articles. Technical work published in WWW '09, patented. Deployed methods in production.
 - Explore-exploit: Implemented, experimented and analyzed extensively several explore-exploit schemes for efficiently identifying the best stories from a dynamic content pool based on real-time user feedback. Deployed to production, currently serving several key yahoo products. Technical paper published in ICDM '09 won the *best research paper* award. Patented method.
 - Segmentation models: Developed, analyzed and deployed coarse personalization models using clustering techniques to segment users based on user attributes and activity.
 - Offline evaluation method: Developed method and system to reliably predict model performance from historical data. *Patented* novel evaluation method.
- Advise product and engineering on dashboard tools, which drive insights to editors for programming content.

Software Engineer, Search Marketing Solutions, Yahoo!**Jun 2006 – Aug 2007**

- Worked on tools for reporting based on query logs for different advertisers. Proposed, prototyped, deployed novel ways of clustering and visualizing data, providing useful feedback for advertisers.
- Filed and granted two patents on related ideas.

Internships

- *MSN Search (Jun – Aug 2005)*: Worked in spelling correction team: studied techniques and implemented spelling correction for a specific subset of queries
- *Yahoo! R&D HotJobs team (Jan – Jun 2004)*: Worked in the HotJobs team, where the focus was on intelligently matching resumes and job descriptions. Built an efficient parser in C++ for resume tokenization. Initiated a project for automatic segmentation and extraction of sections from resumes. Defined the problem, developed a data mining based solution; developed prototypes, experimented with clustering techniques, and classification methods. This work evolved into a mainstream project and eventually powered candidate and job search tools.
- *Indian Institute of Science (Jan – Mar 2004)*: Developed a predictive texting technique (for T9 system on phones) for the Tamil language. Gathered data, designed and implemented prediction algorithm, and built a prototype. Work presented at a conference.

Awards / Honors

- Winner of the best research paper award in ICDM (International Conference on Data Mining), 2009.
- Yahoo internal:
 - Won best paper award (800+ submissions) in Tech Pulse 2011, Yahoo's annual tech conference.
 - Yahoo! patent filing milestone award.
 - Key member of Yahoo! Superstar award-winning team, for work on the content optimization project in 2008.
 - Winner of "you rock" award for efforts on personalized recommendations in 2010.
 - Member of Yahoo! Superstar award winning team on abuse detection in 2011.
 - Nominated for individual superstar award in 2011.
- BITS Merit Scholarship awards (for ranking in the top 10 of university).
- Ranked 21st (out of nearly 80, 000) in the National Science Olympiad, 2000 (India).
- Highest aggregate score (96.8%) in 12th grade ISC (Indian School Certificate) exams in Karnataka state, 2000.
- Won first & second prizes in various programming contests as a part of APOGEE 2003 and 2001, an all-India intercollegiate Tech festival of BITS, Pilani.

Publications

- Several technical reports presented and published within Yahoo, and presented in Yahoo's internal Tech Pulse conference in 2009, 2010 and 2011.
- **Click Shaping to Optimize for Multiple Objectives**. D. Agarwal, B-C. Chen, P. Elango and X. Wang. In KDD 2011.
- **Fast online learning through offline initialization for time-sensitive recommendations** with D. Agarwal, B-C. Chen, P. Elango In KDD 2010.
- **Explore/Exploit Schemes for Web Content Optimization**, D. Agarwal, B-C. Chen, P. Elango. Appears in ICDM, 2009. **Winner of the Best Research Paper Award**.
- **Spatio-Temporal Models for Estimating Click-through Rate**, D. Agarwal, B-C. Chen, P. Elango. WWW 2009.
- **Online Models for Content Optimization** with D. Agarwal, B-C. Chen, P. Elango, et al. NIPS 2008.

Papers from projects at school

- **Coreference Resolution: A Survey**, P. Elango, Technical Report, UW-Madison, 2006
- **Deploying Virtual Machines as Sandboxes for the Grid** with S. Santhanam, P. Elango, A. Arpaci-Dusseau, and M. Livny. *Second Workshop on Real, Large Distributed Systems (WORLDS), 2005, San Francisco, CA*
- **Design Choices for Utilizing Disk Idleness in a Virtual Machine Environment**, P. Elango, S. Krishnakumaran and R. Arpaci-Dusseau, *Workshop on the Interaction between Operating Systems and Computer Architecture, June 2006*
- **Predictive Texting for Tamil**, A.G Ramakrishnan, P. Elango, V. Ramaswamy *Symposium on Indian Morphology, Phonology, and Language Engineering (SIMPLE '04), March 2004, Kharagpur, India.*

Patents

- Bee-Chung Chen, **Pradheep Elango** and Deepak Agarwal. Dynamic Estimation of the Popularity of Web Content. (#20100241597)
- **Pradheep Elango**, Raghu Ramakrishnan, Seung-Taek Park, Bee-Chung Chen, Deepak Agarwal. Framework to Evaluate Content Display Policies. (#20100030717)
- Wei Chu, Seung-Taek Park, Scott Roy, **Pradheep Elango**, Deepak Agarwal, Bee-Chung Chen, Raghu Ramakrishnan, Todd Beaupre. Conjoint Analysis with Bilinear Regression Models for Segmented Predictive Content Ranking. (#20100125585)
- Bee-Chung Chen, Deepak Agarwal, **Pradheep Elango**, Wei Chu, Raghu Ramakrishnan, Scott Roy, Nitin Motgi. Enhanced Matching through Explore/Exploit Schemes. (#20100121624).
- Bee-Chung Chen, Deepak Agarwal, Raghu Ramakrishnan, Vijay Narayanan, **Pradheep Elango**, Amit Seth, Vik Singh, Nitin Motgi, Joe Zachariah, Scott Roy. Customized Today Module. (#20090063984).
- **Pradheep Elango** and Stephen Sullivan. Method for generating structured query results using lexical clustering. (#20090043753)
- **Pradheep Elango**, Method and system for mining, ranking and visualizing lexically similar search queries for advertising. (#20090192983)
- A few pending patents.

Education

The University of Wisconsin-Madison, WI

Sep 2004 – May 2006

M.S. in Computer Science, GPA: 4.00/4.00

Selected projects: Modeling and clustering visually similar images using topic models; modeling and clustering of network traffic patterns; study of co-reference resolution techniques; kernel programming and study of virtual machines in a distributed environment.

Teaching Assistant: Introduction to Artificial Intelligence

Birla Institute of Technology and Science (BITS), Pilani, India

Aug 2000 – June 2004

B.E. (Honors) Computer Science

Major GPA: 10.00/10.00, Overall GPA: 9.92/10.00

Selected projects: Development and study of document clustering techniques; distributed linux kernel programming; compiler design and development; OS development in assembly language.

Teaching Assistant: Introduction to theory of computation.

Selected Course Work

- *Stanford University:* Probabilistic Models in Artificial Intelligence
- *University of Wisconsin-Madison:* Advanced Natural Language Processing, Non-parametric methods in Statistics and Machine Learning, Computer Vision; Advanced Computer Architecture, Introduction to Computer Networks, Advanced Operating Systems, Distributed Systems, Pervasive Parallelism
- *Birla Institute of Technology and Science, Pilani, India:* All basic CS classes including Database Systems, Artificial Intelligence, Machine Learning, Software Engineering, Network Programming

Activities

- Presented talks on content optimization at Indian Institute of Science (Bangalore), University of Wisconsin-Madison, and University of Illinois at Urbana-Champaign.
- Director of Center for Entrepreneurial Leadership, BITS Alumni Association, Bay Area (2006-2008)
 - Organized a series of well-attended entrepreneurship lectures.
 - Managed a global team of volunteers for running related initiatives.
- Represented undergraduate university in inter-college chess tournaments, won first and second prizes. Also play tennis and table tennis.