

# ANUSHKA ANAND

Address: 1111 S. Laflin St., Apt. 712, Chicago, IL-60607. Email: [aanand2@uic.edu](mailto:aanand2@uic.edu)  
Visa Status: F-1 Website: <http://cs.uic.edu/~aanand/>

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## RESEARCH SUMMARY

Developing methods and tools for visual analytics – the use of statistical methods and interactive visualization tools for large data analysis.

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## EDUCATION

*Sept 2006-Present [Expected graduation date: May 2012]*

Ph.D. in Computer Science, University of Illinois at Chicago (UIC), IL

*May 2006*

M.Sc. in Computer Science, UIC, [Cumulative G.P.A 4.0/4.0]

*December 2003*

B.Sc. in Computer Science, American University of Sharjah (AUS), United Arab Emirates, [Cumulative G.P.A 4.0/4.0] (magna cum laude + AUS President's Cup recipient)

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## WORK EXPERIENCE

*August 2004 – Present: Research Assistant in the National Center for Data Mining at UIC, Chicago, IL*

VMBT Projects:

- Applied Visual Model-Based Transformations to high-dimensional data for anomaly detection.

Angle Network Anomaly & Emergent Behavior Detection Project:

- Developed infrastructure for processing of real-time IP packet data streams along with real-time data mining algorithms that select different data models, find emergent behavior given a model and detect outlying behavior for display on an AJAX web interface

Highway Gateway Project: (Spatial-temporal data mining)

- Designed the database for real-time flows of highway traffic sensor data from the Chicagoland area.
- Developed statistical models for detecting anomalies and visualizing trends, changes and alerts in real-time traffic feeds.

*June 2010 –August 2010: Technical Intern at AT&T Research Labs (Shannon Lab), Florham Park, NJ*

- Developed analytic and interactive visualization techniques to deal with the challenges of visually analyzing large scale and massively concurrent time series.

*May 2005 –August 2005: Engineering Intern at Motorola Inc., Schaumburg, IL*

- Ported Motorola's Dialog Manager and Automatic Speech Recognition (ASR) systems from the Linux platform for execution under the Windows platform.
  - Created a user guide and sample applications for others to use the ASR system.
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## COMPUTER SKILLS

- *Programming:* Java, Python, C++, SQL.
  - *Databases:* PostgreSQL, MySQL.
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## PUBLICATIONS

- Wilkinson, L., Anand, A. & Dang, T., N. **CHIRP: A New Classifier based on Composite Hypercubes on Iterated Random Projections.** Proceedings of the ACM KDD 2011.

- Dang, T. N., Wilkinson, L. & Anand, A., "**Stacking Graphic Elements to Avoid Over-Plotting**," *IEEE Transactions on Visualization and Computer Graphics* 16(6), p. 1044-1052, Dec. 2010.
- Anand, A., Wilkinson, L. & Dang, T. N., "**An L-infinity Norm Visual Classifier**", *Proceedings of the 9th IEEE International Conference on Data Mining*, Dec. 2009.
- Grossman, R., Sabala, M., Connelly, S., Gu, Y., Handley, M., Sulo, R., Turkington, D., Anand, A., Wilkinson, L., Foster, I., Leggett, T., Papka, M., Wilde, M., Mambretti, J., Lucas, B. & Tran, J., "**Angle: Detecting Anomalies and Emergent Behavior from Distributed Data in Near Real Time**", *Proceedings of SC07-International Conference for High Performance Computing, Networking, Storage and Analysis*, Nov 2007. (Winner of the High Performance Analytics Challenge).
- Wilkinson, L., Anand, A. & Grossman, R., "**High-Dimensional Visual Analytics: Interactive Exploration Guided by Pairwise Views of Point Distributions**", *IEEE Transactions on Visualization and Computer Graphics* 12(6), p. 1363-1372, 2006.
- Grossman, R. L., Sabala, M., Anand, A., Chaves, J., Vejcek, S. & Zhang, P., "**Real Time Change Detection and Alerts from Highway Traffic Data**", *Proceedings of SC05*, Nov. 2005. (Winner of the High Performance Analytics Challenge).
- Wilkinson, L., Anand, A. & Grossman, R., "**Graph-theoretic Scagnostics**", *Proceedings of the IEEE Information Visualization 2005*, p. 157-164, 2005.

#### POSTERS

- Anand, A., Wilkinson, L. and Dang, T.N., "**Using Random Projections to Identify Class-Separating Variables in High-Dimensional Spaces.**" *IEEE Visual Analytics in Science and Technology*, 2011 (Best Poster).
- Anand, A., Wilkinson, L. and Dang, T.N., "**CHIRP: A New Classifier based on Random Projections and Covering.**" 5<sup>th</sup> Annual Workshop for Women in Machine Learning, Dec. 2010.
- Anand, A., Anderson, J. & Berger-Wolf, T., "**Predicting Orientation Selectivity in Primary Visual Cortex**", *Proceedings of the Annual Meeting of the Vision Sciences Society*, May 2010.
- Anand, A., Grossman, R. & Handley, M., Sulo, R., Wilkinson, L., "**Identifying and Querying Local and Large-Scale Structures Using L-infinity Norms in Visual Analytics**", *Proceedings of the Grace Hopper Celebration of Women in Computing Conference*, Oct 2007.
- Sulo, R., Anand, A., Wilkinson, L., Grossman, R. & Eick, S., "**Topographically Based Real-Time Traffic Anomaly Detection in a Metropolitan Highway System**", *Proceedings of the IEEE Symposium on Information Visualization*, Oct 2006.

#### INVITED TALKS

- Anand, A. and Urbanek, S., "**Interactive Visualization of Multiple Time Series.**" *Interface Symposium 2011*, June 2011
- Anand, A., Wilkinson, L., and Dang, T. N., "**CHIRP: A New Classifier based on Random Projections and Covering.**" Dept. of Statistics Colloquium, Iowa State University, Nov. 2010.

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#### ACHIEVEMENTS & AWARDS

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| May 2008, 2009,<br>2010, 2011 | UIC CS Department Student Leadership and Service Award recipient for initiatives in the Computer Science Graduate Student Association |
| Apr. 2008, 2010,<br>2011      | Chancellor's Student Service Award recipient for initiatives in the CS Grad Student Association and Women in CS group                 |

<i>Sep. 2009</i>	HP Scholarship recipient to attend the Grace Hopper Conference 2009
<i>Dec. 2008</i>	Google Workshop for Women Engineers travel award recipient
<i>Oct. 2006, 2007</i>	Recipient of the UIC CS department travel award to the Grace Hopper Conference of Women in Computing
<i>Jun. 2004</i>	President's Cup graduation award - highest G.P.A class of 2004 (AUS)

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### **ACTIVITIES**

<i>Aug. 2011-Aug. 2012</i>	Student member of the Board of Trustees of the Anita Borg Institute for Women in Technology
<i>Jun. 2011-Jun. 2012</i>	Chair of the professional Chicago Chapter of the ACM
<i>Mar. 2011</i>	Reviewer for IEEE Symposium on Information Visualization 2011
<i>May 2009-Spring 2011</i>	President of the Computer Science Graduate Student Association (CSGSA) at UIC
<i>Fall 2007-Spring 2011</i>	President of the Women in Computer Science group at UIC
<i>May 2009-Spring 2011</i>	Secretary of the Graduate Student Council (GSC) at UIC
<i>Dec. 2010</i>	Reviewer for Eurographics/IEEE Symposium on Visualization 2010
<i>Nov. 2009-Jun. 2010</i>	The UIC student representative on the Search Committee for the President of the University of Illinois
<i>Apr. 2010</i>	Project leader managing 11 volunteers at a community service site for UIC Cares Day
<i>Sep. 2009</i>	Student volunteer at the Grace Hopper Conference 2009
<i>Jun. 2009</i>	Volunteered organizing Summer Super Math for elementary kids at the Oak Park Public Library
<i>May 2009</i>	Women In Science and Engineering ambassador aiding in UIC campus tour day for the Young Women's Leadership Charter School
<i>Fall 2004-Spring 2009</i>	Committee member of the CSGSA. I organized weekly Faculty Mentor Lunches with graduate students (Fall 2007-Spring 2008), events such as talks or seminars and some of the weekly Friday socials
<i>Fall 2008-Spring 2009</i>	Student subcommittee member of the UIC Chancellors Committee on the Status of Women at UIC
<i>Apr. 2009</i>	Project leader managing 7 volunteers at a community service site for UIC Cares Day
<i>Mar. 2009</i>	Special awards judge at the 59 <sup>th</sup> Annual Chicago Public Schools Science Fair for the Association of Women in Science
<i>Mar. 2008</i>	General Judge at the 58th Annual Chicago Public Schools Science Fair
<i>Mar. 2006</i>	Reviewer for IEEE Symposium on Information Visualization 2006
<i>Aug. 2005</i>	Student volunteer at the ACM Knowledge Discovery and Data mining conference
<i>Fall 2002-Spring 2003</i>	President of the ACM Student Chapter at AUS

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### **REFERENCES**

Available on request.