

Nicola Dell

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Research Statement

My research interests are in computer vision, machine-learning and human-computer interaction, with a focus on designing and evaluating applications that improve the lives of underserved populations in low-income regions. I am interested in investigating the potential for smartphones to be used as a mobile medical platform for disease diagnosis at the point of care in developing countries.

Education

Ph.D. Student, Computer Science and Engineering
University of Washington. Seattle, WA.
Advised by: Gaetano Borriello and Linda Shapiro

M.S., Computer Science and Engineering
University of Washington. Seattle, WA.
June 2011

Qualifying Project: VIQUEN: A Visual Query Engine for RDF
Advised by: Linda Shapiro and James Brinkley

B.S., Computer Science
University of East Anglia, Norwich, UK.
Second year at the University of Victoria, BC, Canada.
July 2004
Graduated with First Class Honors.

G.C.E. A levels
Chisipite Senior School, Harare, Zimbabwe.
December 2000
English (A), Mathematics (A), Biology (A), Chemistry (B), General Paper (A).

Publications

Journal

Dell N., Shapiro L. G., Brinkley J. F., VIQUEN: A Visual Query Engine for RDF, submitted to the Journal of Biomedical Informatics (JBI), submitted August 2011.

Conference

Dell, N., Breit N., Borriello G., Digitizing Paper-Based Vaccine Data via Mobile Imaging Technologies, submitted to 2nd Annual ACM Conference on Computing for Development (DEV 2012), submitted October 2011.

Dell, N., Vaidyanathan V., Medhi I., Cutrell E., Thies W., "Yours is Better!" Participant Response Bias in HCI, submitted to the ACM SIGCHI Conference on Human Factors in Computing Systems (CHI 2012), submitted September 2011.

Dell, N., Venkatachalam, S., Stevens, D., Yager, P., and Borriello, G. Towards a Point-of-Care Diagnostic System: Automated Analysis of Immunoassay Test Data on a Cell Phone, 5th ACM Workshop on Networked Systems for Developing Regions, 2011.

Theses

Dell, N., VIQUEN: A Visual Query Engine for RDF, Advised by Linda Shapiro and James Brinkley. University of Washington, CSE Qualifying Examination Project, 2010.

Dell, N., Animation of a Dance Notation Language using Motion Capture and Vertex Interpolation. Advised by Rudy Lapeer. University of East Anglia, CS Undergraduate Honors Thesis, 2004.

Research Experience

Graduate Research Assistant, UW Change Group, Seattle (2010 - present)

A Point-of-Care Diagnostic System

with Gaetano Borriello (UW CSE) and Paul Yager (UW Bioengineering)

- Developing a smartphone application that can automatically process microfluidic, paper-based assay tests and deliver a meaningful diagnosis to patients at the point of care, within a single clinic visit.

Automated Cervical Cancer Screening

with Gaetano Borriello (UW CSE) and Linda Shapiro (UW CSE)

- Developing a system that can automatically identify abnormal cancerous and precancerous tissue in images captured during visual inspection of the cervix.

Digitizing Paper-Based Vaccine Data with Mobile Imaging Technologies

with Gaetano Borriello (UW CSE)

- Developing a smartphone application that uses computer vision to digitize data from paper forms used to record vaccine statistics in rural health centers in Mozambique.
- Awarded a Bill and Melinda Gates Foundation Grand Challenges Award.
- Awarded the 2011 UW CSE Affiliates People's Choice Award.

Graduate Research Assistant, UW Structural Informatics Group (2009 - 2010)

A Visual Query Engine for RDF

with Linda Shapiro (UW CSE) and James Brinkley (UW Biological Structure)

- Developed a graphical query engine that allows users to express biomedical queries, and extract and visualize portions of biomedical ontologies without the need for complex programming.

Research Intern, Microsoft Research, Bangalore India (2011)

Participant Response Bias in HCI

with Bill Thies (MSR) and Edward Cutrell (MSR)

- Performed a quantitative study that demonstrates the importance of interviewer effects in the evaluation of new technologies and highlights the critical role of social distance in HCI.

Undergraduate Researcher, University of East Anglia (2003-2004)

Animation of a Dance Notation Language using Motion Capture and Vertex Interpolation

with Rudy Lapeer (UEA)

- Developed an interactive animation system that generated animation sequences corresponding to input strings of a dance notation language.

Teaching Experience

Sahmyook Elementary School, Daejeon, South Korea (2007 - 2009)

- Instructed and mentored 100+ children in an English immersion program.
- Pioneered the school's sixth grade immersion program and created the teaching objectives and course material to meet the needs of the curriculum and the students.
- Appointed Head Teacher and was leader of a team of 13 teachers from a diverse range of countries.
- Implemented the first social studies program and developed the program curriculum.

Other Employment

Character Matters Animation Studio, Cape Town, South Africa (2004 - 2006)

- Created short and long format animated films, including a pilot for an animated CG feature film.
- Experienced in all aspects of the computer graphics pipeline, including design, modeling, texturing, animating, lighting, rendering, compositing, editing, programming and website development.
- Contributed to Cape Town's Animation XChange, a community driven initiative aimed at unifying the South African community and fostering development of the African animation industry.

University Food Outlet, University of East Anglia, Norwich, UK (2001 - 2004)

- Balanced a part-time job with full-time undergraduate studies.

Academic Awards

University of East Anglia International Student Scholarship 2001-2004

University of East Anglia Prize for Distinguished Performance in Year One 2002

Chisipite Senior School Dux of School (Highest Academic Award) 2000

Chisipite Senior School Top Mathematics Student and Top Chemistry Student 2000

Chisipite Senior School Academic Honors 1999

Other Awards

British Universities Karate Competition Bronze Medal Winner 2004

University of East Anglia First XI Field Hockey and Team of the Year Award 2001-2002

Chisipite Senior School Prefect and Deputy House Captain 2000

Chisipite Senior School Orchestra and Flute Choir leader, 1999-2000

Associated Board of the Royal Schools of Music Flute Grade 8 with Distinction 1999

Zimbabwe U18A and U16A Field Hockey, and U14A Tennis 1996-2000

Zimbabwe Combined Schools Orchestra 1995-2000

Service

Graduate Student Coordinator 2011-2012, UW CSE Department

Official liaison between the faculty and the graduate students.

Change Seminar Organizer 2011-2012, UW CSE Department

Coordinate talks by external speakers and facilitate group discussions.

Social Coordinator 2010-2011, UW CSE Department

Organized social events for the department faculty, staff and graduate students.