

# Nalin Chhibber

GRADUATE STUDENT RESEARCHER

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## Overview

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I am a research based Master's student in David R. Cheriton School of Computing Science at the University of Waterloo. I am supervised by Dr Edith Law in the Human-Computer Interaction lab and funded by SWaGUR. My research interests lie on the intersection of Human-AI Interaction and Intelligent User Interfaces. I am currently studying how to effectively combine Human and Artificial Intelligence to create conversational agents that can expand their knowledge on a topic.

## Education

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### M.Math. in Computer Science

University of Waterloo, Ontario, Canada

ADVISOR: EDITH LAW (HUMAN COMPUTER INTERACTION GROUP)

Sept 2017 - Present

### B.Tech. in Computer Science and Engineering

Indraprastha University, New Delhi, India

ADVISORS: CHARU ARORA (MSIT), GOPAL KRISHNA PATRA (CSIR-4PI)

Aug. 2010 - Jul. 2014

## Experience

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### RSVP.ai Inc

Waterloo, Canada

NATURAL LANGUAGE PROCESSING INTERN

Dec. 2018 - Present

Developing multimodal interaction techniques for conversational agents.

### Google Summer of Code

Waterloo, Canada

STUDENT DEVELOPER FOR AIMACODE

May. 2018 - Aug. 2018

Worked with Peter Norvig (Director of Research at Google) to design and implement a student-instructor workflow for a new platform. The platform hosts aima-exercises for the fourth edition of the book 'Artificial Intelligence: A Modern Approach'

### University Of Waterloo

Waterloo, Canada

GRADUATE RESEARCH AND TEACHING ASSISTANT

Sept. 2017 - Present

Along with my regular research, I assist course instructors from advance undergrad courses (CS 330, CS 490, CS 349, CS 348) by grading/automating assignments, proctoring exams and conducting weekly personal consultations for students.

### Compro Technologies

New Delhi, India

FULLSTACK SOFTWARE ENGINEER

Oct. 2014 - Aug. 2017

Worked on the full technological stack for web and mobile applications to create next generation e-learning products (e-reader, courseware) that aim to engage students in learning activities.

### CERN, GS-Scientific Information Service

Geneva, Switzerland

SUMMER STUDENT INTERN

June. 2014 - Aug. 2014

Worked at GS-Scientific Information Services group to enrich exiting metadata with data from other libraries and integrate changes into the open source software 'invenio'. Updated metadata was made available on CDS (CERN Document Server) after the internship.

### CSIR-Fourth Paradigm Institute

Bangalore, India

RESEARCH INTERN, SPARK

Aug. 2013 - Dec. 2013

Worked with Gopal Krishna Patra (Principal Scientist, CSIR 4PI) to create a secure cryptosystem inspired by chaos theory. This was a part of CSIR-SPARK (Student Program for Advancement in Research Knowledge).

## Skills

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### Languages

C/C++ JavaScript SQL Shell Scripting HTML/CSS

L<sup>A</sup>T<sub>E</sub>X JAVA NodeJS NoSQL Python Markdown Processing

## Publications

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### Typealike: Typing-Friendly Command Postures

SUBMITTED TO ACM CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS (SIGCHI)

*Nalin Chhibber, Edith Law, Daniel Vogel*

*Glasgow, Scotland*

*Conference in May. 2019*

### Expression of Curiosity in Social Robots: Design, Perception, and Effects on Behaviour

SUBMITTED TO ACM CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS (SIGCHI)

*Jessy Ceha, Nalin Chhibber, Edith Law, Dana Kulic, Joslin Goh, Pierre-Yves Oudeyer, Corina McDonald*

*Glasgow, Scotland*

*Conference in May. 2019*

### Human Perception of Surprise: A User Study

WORKSHOP ON COMPUTATIONAL SURPRISE IN 41TH ACM CONFERENCE ON RESEARCH AND DEVELOPMENT IN INFORMATION RETRIEVAL (SIGIR)

*Michigan, USA*

*Nalin Chhibber, Rohail Syed, Mengqiu Teng, Joslin Goh, Kevyn Collins-Thompson, Edith Law*

*Jul. 2018*

### Prototype Tasks: Improving Crowdsourcing Results through Rapid, Iterative Task Design

PRESENTED ON 5TH AAAI CONFERENCE ON HUMAN COMPUTATION AND CROWDSOURCING (HCOMP)

*Nalin Chhibber with Stanford Crowd Research Collective*

*Quebec, Canada*

*Oct. 2017*

### Crowd Guilds: Worker-led Reputation and Feedback on Crowdsourcing Platforms

IN PROCEEDINGS OF THE 20TH ACM CONFERENCE ON COMPUTER SUPPORTED COOPERATIVE WORK AND SOCIAL COMPUTING (CSCW)

*Nalin Chhibber with Stanford Crowd Research Collective*

*Oregon, USA*

*Feb. 2017*

### Boomerang: Aligning Worker and Requester Incentives on Crowdsourcing Platforms

IN PROCEEDINGS OF THE 29TH ACM SYMPOSIUM ON USER INTERFACE SOFTWARE AND TECHNOLOGY (UIST)

*Nalin Chhibber with Stanford Crowd Research Collective*

*Tokyo, Japan*

*Oct. 2016*

### Synchronization of Chaos in Multiple Three-Dimensional Chaotic Maps

IN PROCEEDINGS OF IEEE INTERNATIONAL SYMPOSIUM ON TECHNOLOGY MANAGEMENT AND EMERGING TECHNOLOGIES (ISTMET)

*Nalin Chhibber, Gopal Patra*

*Langkawi, Malaysia*

*Aug. 2015*

### Enriching the metadata on CERN Document Server

CERN DOCUMENT SERVER INTERNAL NOTE

*Nalin Chhibber, Javier Martin Montull, Tullio Basaglia, Jens Vigen*

*Geneva, Switzerland*

*Aug. 2014*

## Projects

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**Teachable Agents:** Conversational agent framework that enables students to interact with a peer agent to learn about a topic of interest. This is an active research project led by professor Edith Law in the University of Waterloo HCI lab.

**Curiosity Notebook:** Framework to effectively combine Human and Artificial Intelligence to assist teachers in K-12 classrooms. The idea is to augment human teachers (not replace them) by means of virtual teaching assistants that can keep students engaged even outside classrooms. This is an active research project led by professor Edith Law in the University of Waterloo HCI lab.

**Typealike Interactions:** Typealike is an input technique that uses computer vision and machine learning to identify simple hand postures over the keyboard surface. It supports hand postures which can augment keyboard operations by triggering commands or activating additional input modes without disturbing the natural typing flow.

**Cosmic Shooters, Storykart, MarkdownJS, Tweebbles** and **ChatJS** are some other projects I built. I am also active on online developer communities like **Stackoverflow** ( 6000+ reputation, 25 badges, 5 bounties) and **contribute to open-source projects** (KDE, AIMACode, Stanford Crowdresearch, Python FOSSEE TBC).