

# CSI033 ASSIGNMENT 2 SLIDE SHOW

Some of Laura's Favourites

Assignment 2 - 103 Slides 1

**UCNC 2014**  
Unconventional Computation & Natural Computation  
Western University International Conference on Unconventional Computation and Natural Computation  
16-18 July 14-18, 2014  
Western University, London, Ontario, Canada  
Conference Chairs: Dr. Mark Daley and Dr. Lila Karl  
Visit us at: <http://www.csd.uwo.ca/uncnc2014>

IMPORTANT DATES:	INVITED SPEAKERS:	TUTORIALS:	WORKSHOPS:
<ul style="list-style-type: none"> <li>• Paper submission deadline: January 31, 2014</li> <li>• Notification to authors: March 4, 2014</li> <li>• Final version due: March 21, 2014</li> <li>• Poster submission deadline: April 18, 2014</li> <li>• Early registration ends: May 2, 2014</li> <li>• Conference dates: July 14 - July 18, 2014</li> </ul>	<ul style="list-style-type: none"> <li>• Dr. Gauri Joshi - University of Waterloo, Canada</li> <li>• Tom Lee - University of Toronto, Canada</li> <li>• Dr. Gauri Joshi - Western University, Canada</li> <li>• Dr. Yang Liu - University of Waterloo, Canada</li> </ul>	<ul style="list-style-type: none"> <li>• Quantum Computation</li> <li>• Digital Computation</li> <li>• Neural Networks</li> <li>• Cellular Automata</li> <li>• Mark Daley</li> </ul>	<ul style="list-style-type: none"> <li>• Physics and Computers</li> <li>• Dr. Carlos Wells</li> <li>• Evolution and Computation</li> <li>• Peter Watson</li> </ul>

Assignment 2 - 103 Slides 2

**UCNC 2014**  
UNCONVENTIONAL COMPUTATION & Natural COMPUTATION  
Chairs: Dr. Mark Daley and Dr. Lila Karl  
July 14-18, 2014  
Western University  
London, Ontario, Canada

Tutorials	Invited Speakers
<ul style="list-style-type: none"> <li>• Evolutionary Algorithms</li> <li>• Artificial Life</li> <li>• Neural Networks</li> <li>• DNA Computing</li> </ul>	<ul style="list-style-type: none"> <li>• Dr. Bill Grigg - University of Toronto</li> <li>• Dr. Steve Edelkamp - University of Mainz</li> <li>• Dr. Sarah Whalley - University of Toronto</li> <li>• Dr. Lila Karl</li> </ul>

**Workshops**  

- Neurocomputing
- Invertibility
- Genetic Computation
- Dr. Lila Karl

**PAPER SUBMISSION DEADLINE: JANUARY 31, 2014**  
**NOTIFICATION TO AUTHORS: MARCH 4, 2014**  
**FINAL VERSION DUE: MARCH 21, 2014**  
**POSTER SUBMISSION DEADLINE: APRIL 18, 2014**  
**EARLY REGISTRATION ENDS: MAY 2, 2014**  
**CONFERENCE DATES: JULY 14 - JULY 18, 2014**  
**WEBSITE: [HTTP://WWW.CSD.UWO.CA/UNCNC2014](http://www.csd.uwo.ca/uncnc2014)**

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**UCNC 2014**  
Unconventional Computation & Natural Computation  
July 14-18, 2014  
Western University  
Western, London, Ontario, Canada

**Important Dates**  
 Paper Submission deadline: Jan. 31, 2014  
 Notification to Authors: Mar. 4, 2014  
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 Poster Submission deadline: Apr. 18, 2014  
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 Conference Dates: July 14 - 18, 2014

**More info at:**  
<http://www.csd.uwo.ca/uncnc2014>

**Conference Chairs**  
 Dr. Mark Daley  
 Dr. Lila Karl

**Tutorials**  
 Robot Anatomy - Dr. R2D2  
 The Art of Science - Jessica Biel  
 Finger Lickin' Good - Dr. K. F. Cee

**Workshops**  
 Atomic - Jeremy Lin  
 Einstein Revisited - Joe Schmoie

**Invited Speakers**  
 Optimus Prime - University of Earth  
 Incredible Hulk - Gamma University  
 Spider Man - Marvel Academy  
 Dr. Doom - Tesla College

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**UCNC 2014**  
July 14-18, 2014  
Western University  
London, Ontario, Canada

**KNOWLEDGE MINDS COME TO CREATE THOUGHT**

**Unconventional Computation and Natural Computation**  
Western University, London, Ontario, Canada

Conference chairs	Tutorials	Important Dates	Final version due
<ul style="list-style-type: none"> <li>• Dr. Mark Daley &amp; Dr. Lila Karl</li> </ul>	<ul style="list-style-type: none"> <li>• Quantum Information - John Hink</li> <li>• Optical Computation - Neil Flanders</li> <li>• Cellular Automata - Lenny Leonard</li> </ul>	<ul style="list-style-type: none"> <li>• Paper submission deadline: January 31, 2014</li> <li>• Notification to authors: March 4, 2014</li> <li>• Early registration ends: May 2, 2014</li> <li>• Conference dates: July 14 - July 18, 2014</li> </ul>	<ul style="list-style-type: none"> <li>• March 21, 2014</li> </ul>

**Invited Speakers**  
 Lila Simpson - University of Waterloo  
 Todd Randles - University of Edmonton  
 Rosp Wiggum - University of Calgary  
 Scott Simpson - University of Ottawa

**Workshops**  
 DNA computing - Pratik Souther  
 AI in networks - Seymour Shoroff

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**July 14-18, 2014**  
Western University  
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**UCNC 2014**  
Unconventional Computation & Natural Computation

**Dr. Mark Daley and Dr. Lila Karl** [www.csd.uwo.ca/uncnc2014](http://www.csd.uwo.ca/uncnc2014)

**INVITED SPEAKERS**  
 Allred Harris - University of Waterloo, Canada  
 Mary Smith - University of Toronto, Canada  
 Paul Michele - McGill University, Canada  
 Susan Levine - Queens University, Canada

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**WORKSHOPS**  
 Physics & Computers - Paul Butane  
 Algorithm Design - Stevie Bink

**TUTORIALS**  
 Quantum Information - Daniel Jones  
 Systems Theoretic Studies - Ben Wilson  
 Dynamic Programming - Norma Bethel

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# unconventional computation & natural computation

**workshops**

**Open Class** of  
Andrew Hone  
Western Computing of  
Francisco Mera

**invited speakers**

**Brian Rice** of  
University of Toronto, Canada  
**Tammy Sullivan** of  
University of Waterloo, United States  
**Jonathan Borner** of  
University of Toronto, Canada  
**Shengyong Li** of  
University of Toronto, Canada

**tutorials**

**Quantum Information** of  
Davidat Foinik  
Cellular Automata of  
Alex Michael  
Theoretical Computing of  
Yael Lina

UCNC 2014  
July 14-18, 2014  
Western University  
London, Ontario, Canada

Conference Chairs:  
Dr. Mark Daley & Dr. Lila Karl

131	Final paper submission
104	Notification to authors
121	Final version due
118	Poster submission deadline
102	Early registration ends
114	Notification to authors (2014)

## UCNC 2014

### Unconventional Computation and Natural Computation

July 14-18, 2014  
Western University, London, Ontario, Canada

**Invited Speakers**

Brian Griffin  
Debra College, USA  
Erica Sale  
McGill University, Canada  
Kevanand Norbert  
University of Oxford, UK  
So Bob  
Santa Fe College, USA

**Important Dates**

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July 14-18, 2014

**Tutorials**

Quantum Information  
Davidat Foinik  
Cellular Automata  
Alex Michael  
Membrane Computing  
Tess Collins

**Workshops**

Physics and Computation -  
Henry Fudkin  
Hypercomputation  
Alex Dumas

**Conference Chairs**  
Dr. Mark Daley and Dr. Lila  
<http://www.csd.uwo.ca/~ucnc2014>

**Western Science**

## UCNC 2014

### Unconventional Conference & Natural Computation

13th International Conference on Unconventional Computation and Natural Computation

DATE: JULY 14-18, 2014  
WESTERN UNIVERSITY,  
LONDON, ONTARIO,  
CANADA

CONFERENCE CHAIRS:  
DR. MARK DALEY  
DR. LILA KARI

HAVE A BREAK AREA FOR:  
- DIVITED SPEAKERS  
- TUTORIALS  
- WORKSHOPS  
- IMPORTANT DATES:

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Conference dates: July 14-18, 2014

Conference Website:  
<http://www.csd.uwo.ca/~ucnc2014>

## UCNC

Unconventional Computation  
& Natural Computation

### 2014

We're Back,  
And Going To CANADA.

July 14-18

We're back with your chairs

**Dr. Mark Daley**  
Dr. Lila Karl

We're excited for speakers

**Dr. John Waton**  
OCHA  
**Dr. Peter Schwart**  
OCHA  
**Dr. Dave Wong**  
SAPD  
Shengyong Li (paper  
Chair)

We're organized your workshops

**Nature-inspired  
novel hardware**  
by Shengyong Li

**Molecular  
computing**  
by Peter Schaefer

We've prepared your tutorials

**Cellular automata**  
by Jason Stone

**Neural computation**  
**Artificial life**  
by Leon Ojiam

We've invited FOR YOU

**Quantum**  
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Poster submit  
Apr 18, 2014  
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July 14-18, 2014

Western University, London, Ontario, Canada

Western Science

## Unconventional Computation & Natural Computation

Western University, London, Ontario, Canada  
July 14-18, 2014

Conference Chairs:  
Mark Daley & Dr. Lila Karl

**Invited Speakers:**  
Hans Bann - Humboldt University of Berlin, Germany  
Isaac Clark - University of Toronto, Canada  
Aida Hart - Stanford University, USA  
Dr. Mender Freij - Stockholm University, Sweden

**Tutorials:**  
Artificial Neurology with Dr. Andrew Ryan  
Fluids with Dagner Westermann  
Swarm Intelligence with Dr. Jabob Danjic

**Workshops:**  
Manufactured Immunity with Dr. Hairy Callan  
Applying Fluidics with Dr. Frank Forster

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<http://www.csd.uwo.ca/~ucnc2014>

**Western**

Conference  
Chairs:  
Mark Daley (Western U)  
Lila Karl (Western U)

Invited  
Speakers:  
Tom Smith (U of Waterloo)  
Kevanand Norbert (U  
Leland Stanford)  
Lee Hortwell (Stanford)

Tutorials  
• Quantum Computing (Frank Thomas)  
• DNA Computing (Dina Ronen)  
• Membrane Computing (Dimitar Panov)

Workshops  
• Manufacturing (Lila Karl)  
• Cellular Automata (Dimitar Panov)

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**UCNC**  
Unconventional Computation & Natural Computation

2014  
July 14-18

Western University  
London, Ontario, Canada

Western Science

Take full advantage of your computer and join  
 Dr. Mark Daley and Dr. Lila Kari for:

# UCNC 2014

Unconventional Computation & Natural Computation  
 July 14-18, 2014

**Invited Speakers:**  
 Caoshu Jishi - Western University, Canada  
 Pascal Lopez - Carleton University, Canada  
 Rob Gill - University of Waterloo, Canada  
 Jesse Helen - University of Calgary, Canada

**Tutorials:**  
 Microsoft Word - Barney Rubble  
 Photoshop - Spelman  
 Chessmaster - Brian

**Workshops:**  
 Physics and Computation - Sally Hansen  
 Pigeology and Imagery - Monev Singh

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<http://www.csd.uwo.ca/umuc2014>

Western University  
 London, Ontario, Canada

13TH INTERNATIONAL CONFERENCE  
 ON UNCONVENTIONAL COMPUTATION & NATURAL COMPUTATION

July 14-18, 2014  
 Western University  
 London, Ontario, Canada  
[www.csd.uwo.ca/umuc2014](http://www.csd.uwo.ca/umuc2014)

Invited Speakers: Caoshu Jishi, Pascal Lopez, Rob Gill, Jesse Helen  
 Tutorials: Microsoft Word, Photoshop, Chessmaster  
 Workshops: Physics and Computation, Pigeology and Imagery

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**TUTORIALS**  
 Microsoft Word - Barney Rubble  
 Photoshop - Spelman  
 Chessmaster - Brian

**WORKSHOPS**  
 Physics and Computation - Sally Hansen  
 Pigeology and Imagery - Monev Singh

Conference Chairs  
 Dr. Mark Daley & Dr. Lila Kari

Western University

# UCNC 2014

Unconventional Computation & Natural Computation  
 Western University, London, Ontario, Canada  
 July 14-18, 2014

**Workshops:**  
 Natural Computation - by Jane Mark  
 Time Management - by Josh Hur

**Tutorials:**  
 Physics and Math - Time Management - by Jane Mark  
 Word Population - by Josh Hur

**Invited Speakers:**  
 Ellen Son, University of Toronto, Canada  
 Jane Mark, University of Waterloo, Canada  
 Josh Kim, University of Waterloo, Canada  
 Josh Hur, University of Toronto, Canada

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Dr. Mark Daley and Dr. Lila Kari  
<http://www.csd.uwo.ca/umuc2014>

13th International Conference on  
**UNCONVENTIONAL COMPUTATION & NATURAL COMPUTATION**

Conference Chairs:  
**DR. MARK DALEY & DR. LILA KARI**

**SPEAKERS:**  
 Matt Reed - University of Waterloo, Canada  
 Jason Li - Laurier University, Canada  
 Maggie Smith - University of Waterloo, Canada  
 Charlotte Taylor - McGill University, Canada

**TUTORIALS:**  
 Self-Assembling Systems - by Anthony Lawrence  
 Swarm Robotics - by Scott Coffey  
 General Topologies - by Edith Riegler

**WORKSHOPS:**  
 Physics and Computation - by Sophie Lyster  
 Biological Technologies - by Clive Richards

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**LEARN MORE:**  
<http://www.csd.uwo.ca/umuc2014>

July 14 - 18, 2014 • Western University, London, Ontario, Canada

# UCNC 2014

## UNCONVENTIONAL COMPUTATION & NATURAL COMPUTATION

July 14-18, 2014 | Western University, London, ON, Canada

CONFERENCE CHAIRS | Dr. Mark Daley & Dr. Lila Kari

<b>INVITED SPEAKERS:</b> Victor Malyukov Shane Handorf Danielle Soffer Suzanne Cardwell	<b>TUTORIALS:</b> Quantum Computing Cellular Automata Hypercomputation	<b>WORKSHOPS:</b> Physics & Computation Language Theory Formal Computation	<b>IMPORTANT DATES:</b> Paper submission deadline: January 31, 2014 Notification to authors: March 4, 2014 Final version due: March 21, 2014 Poster submission deadline: April 18, 2014 Early registration ends: May 2, 2014 Conference dates: July 14-18, 2014
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**Program Committee:**  
 Mark Daley, Lila Kari, Caoshu Jishi, Pascal Lopez, Rob Gill, Jesse Helen, Matt Reed, Jason Li, Maggie Smith, Charlotte Taylor, Ellen Son, Jane Mark, Josh Kim, Josh Hur, Anthony Lawrence, Scott Coffey, Edith Riegler, Sophie Lyster, Clive Richards, James Jenkins, Lindsay Pelech, Cora Keegan

**Organizing Committee:**  
 Olivia Dusham, Alex Harris, Astrid Farnsworth, Charles Gunn, Lincoln Lee, Arvin Jenkins, Phillip Boylles, Warren Moses, Nina Sharp, Tara Mackley

Western University  
<http://www.csd.uwo.ca/umuc2014>

13th International Conference on Unconventional Computation and Natural Computation  
 July 14-18, 2014  
 Western University, London, Ontario, Canada  
 With conference chairs Dr. Mark Daley and Dr. Lila Kari

Including invited speakers:  
 Amelia Mitchell, University of British Columbia, Canada  
 Gareth Smith, McGill University, Canada  
 Sampson Johnston, Dalhousie University, Canada  
 Julia Charies, Concordia University, Canada

Tutorials:  
 Quantum Information - James Jenkins  
 Evolutionary Algorithms - Lindsay Pelech  
 Swarm Intelligence - Cora Keegan

Workshops:  
 Physics and Computation - Dylan Faulkner  
 Gene Assembly - Jennifer Amos

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<http://www.csd.uwo.ca/umuc2014>



# UCNC 2014

11<sup>th</sup> International Conference on Unconventional Computation and Natural Computation

Chair: Dr. Mark Daley and Dr. Lila Karl

**Invited Speakers**

Bruce Wayne - Gotham University  
Clark Kent - Metropolis University  
Barry Allen - Central City University  
Hal Jordan - Green Lantern University

**Tutorials**

Graphs - Jack Johnson  
Baking - Martha Stewart  
Bad Comedy - Diane Cook



**Workshops**

Interpretive Dance - Laura Reid  
Art of the Handshake - Felix Lee


**Important Dates**

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Early registration ends: May 2, 2014  
Conference dates: July 14-18, 2014

Facebook: UCNC2014  
Twitter: @UCNC2014  
Website: www.csd.uwo.ca/ucnc2014  
Email: ucnc2014@uwo.ca

July 14-18, 2014  
Western University, London, Ontario, Canada



# UCNC 2014

12<sup>th</sup> International Conference on Unconventional Computation and Natural Computation

Chair: Dr. Mark Daley and Dr. Lila Karl

**Invited Speakers**


Sam Chang - Duke University, US  
Tom Jackal - Stanford University, US  
Markus Hoffard - Boston University, US  
Michael Rothbarth - Brown University, US

**Workshops**

Webcam and Flares - David Scordino  
HPC Coding - Jackal Jensen

**Tutorials**

Language for modeling and modeling language - Tom Jackal  
The Code Game - Mark Hoffard



July 14-18, 2014  
Western University, London, Ontario, Canada

# UCNC 2014

Unconventional Computation and Natural Computation

13<sup>th</sup> International Conference

Conference Chairs: Dr. Mark Daley and Dr. Lila Karl



**Invited Speakers**

Wesley Gifford - University of Waterloo, Canada  
Lindsay Green - University of Waterloo, Canada  
Justin Lewis - Wilfrid Laurier University, Canada  
Anna Heister - University of Guelph, Canada

**Tutorials**

Quantum Information  
Formal Languages  
Neural Networks  
Natural Computation

**Workshops**

Physics & Computation  
Chemical Information  
Complexity

**Important Dates**

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Western University,  
London, Ontario,  
Canada

July 14-18, 2014  
[www.csd.uwo.ca/ucnc2014](http://www.csd.uwo.ca/ucnc2014)

# UCNC

13<sup>th</sup> International Conference on Unconventional Computation and Natural Computation

<http://www.csd.uwo.ca/ucnc2014>

July 14-18, 2014  
Western University  
London, Ontario,  
Canada

Conference Chair:  
Dr. Mark Daley  
Dr. Lila Karl

**Invited Speakers:**

Dr. Scott Branson  
Dr. Bruce Wayne  
Dr. Clark Kent  
Dr. Barry Allen  
Dr. Hal Jordan  
Dr. Justin Lewis  
Dr. Anna Heister  
Dr. Markus Hoffard

**Tutorials:**


Physics & Computation  
Complexity  
Formal Languages and Automata  
Neural Networks  
Quantum Information  
Natural Computation

**Workshops:**


Complexity  
Language for modeling and modeling language  
In Jackal Jensen

**Important Dates:**

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July 14-18, 2014  
Western University  
London, Ontario,  
Canada



# UCNC 2014

Unconventional Computing and Natural Computing Conference  
July 14-18, 2014 - Western University - London, Ontario, Canada

Conference Chairs  
Dr. Mark Daley & Dr. Lila Karl

**Invited Speakers**

Bruce Wayne - Gotham University  
Clark Kent - Metropolis University  
Barry Allen - Central City University  
Hal Jordan - Green Lantern University

**Tutorials**


Pottery - Jack Johnson  
Baking - Martha Stewart  
Bad Comedy - Diane Cook

**Workshops**

Interpretive Dance - Laura Reid  
Art of the Handshake - Felix Lee

**Important Dates**

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For More Info Visit:  
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# 2014 UCNC

JULY 14-18, 2014  
WESTERN UNIVERSITY  
LONDON ONTARIO, CA

CHAIRS: Dr. Mark Daley, Dr. Lila Karl  
INVITED SPEAKERS: Samson Abramsky - University of Oxford, UK; Bastien Chopard - University of Geneva, CH; David Corne - Heriot-Watt University, UK; Jubran Karhumäki - University of Turku, FI

TUTORIAL: Mika Hirvensalo - University of Turku, FI  
Quantum Information  
Cellular Automata  
Nicolas Ollinger - Aix-Marseille University, FI  
Taro Harju - University of Turku, FI  
Membrane Computing  
Mario de J. Perez Jimenez - University of Sevilla, ES

WORKSHOPS: Language Theory in Bio Computing; Physics and Computation; Mike Stannett - University of Sheffield, UK

13<sup>th</sup> International Conference on Unconventional Computation and Natural Computation  
csd.uwo.ca/ucnc2014

**UCNC 2014**  
**Unconventional Computation & Natural Computation**  
**13<sup>th</sup> International Conference**  
 July 14-18, 2014 - London, Canada  
 Guest Chair: Dr. Mark Daley and Dr. Lila Kari

**Speakers**  
 Daniela Borraes - Oxford University, England  
 Martin T. Cook - Western University, Canada  
 Peter Todd - University of Toronto, Canada  
 James T. Kirk - Harvard University, United States

**Tutorials**  
 The Quirks of GWERF - Veronica Holmes  
 Why Computers Should Be Made of Honey - Hiroshi I. From  
 The Internet - The Real Frontier - Spock Vukobratovic

**Workshops**  
 Working Computer Brains - Hermann Geiger  
 Thinking Your Way to World Domination - Lila Kari

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 Unconventional Computation & Natural Computation  
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**Conference Chairs**  
 DR. MARK DALEY  
 DR. LILA KARI

**Tutorials**  
 DNA Computing  
 Quantum Computing  
 Approximate Computing

**Workshops**  
 Foundations of Quantum Information  
 Physics and Computation  
 Entanglement and Non-Locality

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**Invited Speakers**  
 John McCloy - University of Waterloo  
 Isabelle Lempereur - University of Toronto  
 Sang Hyeok Lee - University of Waterloo  
 Kalle Järvi - University of Turku

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 Western University  
 London, Ontario, Canada  
 FOR MORE INFORMATION: [WWW.CS.UWO.CA/UNUC2014](http://WWW.CS.UWO.CA/UNUC2014)

**UCNC 2014**  
 unconventional computation & natural computation

**PLACE & DATE**  
 Western University, London, ON, Canada, July 14-18, 2014

**INVITED SPEAKERS**  
 Riley Smith - University of Toronto, CA, John Geiss - University of Waterloo, CA, Erica Stern - Dalhousie University, CA, Jack Cullen - Queens University, CA

**TUTORIALS**  
 Natural Computing - Emily Ross, Cellular Automata - Harper Stevenson, Evolutionary Computing - Jessica Low

**WORKSHOPS**  
 Physics and Computation - Daniel Johnson, Foundations of Quantum Information - Edward Townsend

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Western University  
 For more information visit <http://www.csd.uwo.ca/unuc2014>

**UCNC 2014 - Unconventional Computation & Natural Computation**  
 July 14-18, 2012 Western University, London, Ontario, Canada

**Conference Chairs**  
 Dr. Mark Daley  
 Dr. Lila Kari

**Tutorials**  
 DNA Computing - Laura Holland  
 Quantum Information - Arava Lee  
 Swarm Intelligence - Alan March

**Invited Speakers**  
 Bart Selman - McGill University  
 Harvey Spector - Harvard University  
 Louis Lill - York University  
 Eric Cantone - York University

**Other Topics of Interest**  
 Nanocomputing  
 Genetic Networks  
 Biologically Inspired Computing  
 Biochem - Diffusion Computing  
 Quantum Protocols  
 Fluidic Logic

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<http://www.csd.uwo.ca/unuc2014>

Western University  
 WWW.CSD.UWO.CA

**13th International Conference**  
**Unconventional Computation and Natural Computation**  
 Western University, London, Ontario, Canada  
 July 14-18, 2014  
<http://www.csd.uwo.ca/unuc2014>

**Conference Chairs: Dr. Mark Daley and Dr. Lila Kari (Conference Chair)**  
**Guest speakers:** Sheng-Feng (MacPherson) University, DSH, Tsing-Tsun (University of Hong Kong), Dong-Grin (University of Colorado), Friedrich (University of Bremen)

**Workshops:** Nonlinear Computation, Cellular Automata, Quantum Computing (Dmitry Korzhov)  
**Tutorials:** Approximate Computing, Quantum Computing, DNA Computing, Cellular Automata, Evolutionary Computing  
**Important Dates:** Paper Submission: Jan 31, 2014; Notification to Authors: Mar 4, 2014; Final Version Due: Mar 21, 2014; Poster Submission: Apr 18, 2014; Early Registration: May 2, 2014; Conference Dates: Jul 14-18, 2014

Western University

**UCNC 2014**  
 Unconventional Computation and Natural Computation

**CONFERENCE CHAIRS:**  
 DR. MARK DALEY & DR. LILA KARI

**INVITED SPEAKERS**  
 CHRIS PINDAK | UNIVERSITY OF TORONTO  
 HARRY POTTER | HOGWARTS ACADEMY  
 MARY POPPINS | UNIVERSITY OF BOSTON

**TUTORIALS**  
 LINE DANCING | NIAL HOGAN  
 POPPING | NICKI MINAJ  
 COOKING | GORDON RAMSEY

**WORKSHOPS**  
 PHOTOGRAPHY | CAMERON SMITH  
 BUDGING | PARIS HILTON

**IMPORTANT DATES**  
 PAPER SUBMISSION DEADLINE | JAN 31, 2014  
 NOTIFICATION TO AUTHORS | MAR 4, 2014  
 FINAL VERSION DUE | MAR 21, 2014  
 POSTER SUBMISSION DEADLINE | APR 18, 2014  
 EARLY REGISTRATION | MAY 2, 2014

**CONFERENCE DATE: JULY 14-18, 2014**  
 WESTERN UNIVERSITY, LONDON, ON, CANADA

**UCNC 2014**  
**Unconventional Computation & Natural Computation**  
 July 14 - 18, 2014  
 Western University • London • Ontario • Canada

**Speakers**  
 Dexter Morgan - Miami University  
 Hannah Horvath - Oberlin College  
 David Beckham - Manchester University  
 John Keating - Oxford University

**Workshops**  
 CoSMoS - Bart Simson  
 BioChemIT - Frasier Crane

**Deadlines**  
 Paper Submission - Jan 31, 2014  
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 Early Registration Ends - May 2, 2014  
 Poster Submission - April 18, 2014

**Conference Chairs**  
 Dr. Lila Kari  
 Dr. Mark Daley

[www.csd.uwo.ca/unuc2014](http://www.csd.uwo.ca/unuc2014)

**Western Science**

**13TH INTERNATIONAL CONFERENCE ON UNCONVENTIONAL COMPUTATION AND NATURAL COMPUTATION**

JULY 14-18, 2014  
 WESTERN UNIVERSITY, LONDON, ONTARIO, CANADA

With a special welcome to our conference chairs, Dr. Mark Daley and Dr. Lila Kari

**INVITED SPEAKERS:**  
 Bart Simson, University of Waterloo, Canada  
 Bart Simson, University of Waikato, Ireland  
 Lisa Simpson, University of Tsinghua, Australia  
 Neil A. Simpson, University of East Angles, UK

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**TUTORIALS:**  
 Quantum Information  
 Mickey Mouse  
 Dashing Candy  
 Minnie Mouse  
 Beauty of Physics  
 Mr. M. Ratton

**WORKSHOPS:**  
 Physics and Computation  
 Barney Rubble  
 The Art of Computation  
 Donald Duck

**Western**  
<http://www.csd.uwo.ca/unuc2014>

<http://www.csd.uwo.ca/unuc2014>

**International Conference**  
 UNCONVENTIONAL COMPUTATION AND NATURAL COMPUTATION  
 JULY 14-18, 2014  
 LONDON, ONTARIO, CANADA

**UCNC2014**  
 UNCONVENTIONAL COMPUTATION AND NATURAL COMPUTATION  
 7-14-18-14  
 London, Ont., Canada

**Workshops:**  
 Fred Flinstone - Tutorial 1 Barney Rubble - Computation  
 Sarah Lawrence - Tutorial 2 Barney Simpson - Programming  
 Homer Simpson - Tutorial 3

**Important Dates:**  
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**THE 13TH INTERNATIONAL CONFERENCE ON UNCONVENTIONAL NATURAL COMPUTATION JULY 14-18 2014**

**LONDON, CANADA** Western University

**WITH CONFERENCE CHAIRS: DR. MIKE DALEY DR. LILA KARI**

**SPEAKERS**  
 RYAN GOSLING - UNIVERSITY OF TORONTO  
 BRADLEY COOPER - MCILL UNIVERSITY  
 BRAD PITT - WESTLORD UNIVERSITY

**TUTORIALS**  
 Racking 101 - BARNEY RUBBLE  
 Coding - LINDSEY LORAN  
 Systems - JESTER BUNER

**DATES**  
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**WORKSHOPS**  
 PHYSICS & COMPUTATION - BARNEY RUBBLE  
 DATA MANAGEMENT - JESTER BUNER

[HTTP://WWW.CSD.UWO.CA/UNUC2014](http://www.csd.uwo.ca/unuc2014)

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<UCNC 2014 - Unconventional
Computation & Natural Computation>
-
<date>
July 14-18 2014
<location>
Western University (London, Ontario,
Canada)
...
<conference chairs>
Dr. Mark Kelly and Dr. Lila Kari
...
<speakers>
Tim Berners-Lee (CERN)
Alan Turing (Georgian University)
Ray Kurzweil (Google)
Ken Zolot (MIT)
...
<tutorials>
Coded Biology (James Foster)
Quantum Databases (Ivy Grover)
Leaf Langosch (Alan Kay)
Machine Learning (Elham Alpaydm)
...
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<notification to authors> March 4 2014
<final version due> March 21 2014
<poster submission deadline> Apr 18 2014
<early registration ends> May 2 2014
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 Western University, London, Ontario, Canada  
 July 14-18, 2014

Conference Chairs:  
 Dr. Mark Daley & Dr. Lila Kari

**Invited Speakers:**  
 Mike Freed - Michigan University, US  
 Amy Jull - Lynn University, US  
 Dan Babbage - U of Toronto, Canada  
 James Cingol - U de Centre, France

**Tutorials:**  
 Quantum Mechanics - Krivos Filip  
 DNA Computation - Colleen White  
 Learning to Learn - Isaac Compton  
 Informal Biology - Dan Mahoney  
 Optical Computation - Bill Geyer

**Workshops:**  
 Physics and Computation - Barney Rubble  
 The Art of Computation - Donald Duck

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**Start** Western University

**UCNC 2014**  
Unconventional Computation & Natural Computation  
July 14-18, 2014

**Speakers:** Ronald Reagan, D. Lee Spector, Bob Conner, Henry Chang, Luneta College, Freda D. M. Martin, Quantum Computing, Network Networking, A.G. Bell, Nikola Tesla, Thomas Edison

**3 Tutorials:** Featring World-Renowned Experts

**Workshops:** Engaging, Award-Winning, Sharing the Conference

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**Conference Chair:** Dr. Mark Daley

**Conference Chair:** Dr. Lila Kari

Western University, London, Ontario, Canada  
www.csd.uwo.ca/ucnc2014

**Western University**  
Western University, London, Ontario, Canada

**Workshops:** Quantum Computing, Network Networking

**Tutorials:** Cellular Automata, Fractal Geometry, Quantum Computing, Hyper-Text

**Hosts:** Western University, London, Ontario, Canada

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Conference starts: July 14 - July 18, 2014

**Invited Speakers:** Henry Chang, Freda D. M. Martin, Bob Conner, Ronald Reagan, D. Lee Spector, A.G. Bell, Nikola Tesla, Thomas Edison

**2014 UCNC**  
Unconventional Computation and Natural Computation  
July 14-18, 2014

**Dr. Mark Daley and Dr. Lila Kari Chair**

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**London, Ontario & Western University Presents**  
**UCNC 2014**  
Unconventional Computation & Natural Computation  
July 14-18, 2014  
London, ON, CA

**Conference Info:**  
July 14-18, 2014  
London, ON, CA

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**Workshops:**  
Bioinformatics Information Technology, Western Cloud Computing, Advanced Modeling & Simulation, Data Grids

**Speakers:**  
Dr. Marianne Soth University, Dr. Dadi - University of Guelph, Dr. Steve Magill University, Dr. Inel - Queen's University

**Tutorials:**  
Natural Computing, Lee Oliver, Algorithmic Bioinformatics, Lakshmi Havel, Competition in Theory, Emily Choulet

**Conference Chairs:**  
Dr. Mark Daley  
Dr. Lila Kari

For more info visit: <http://www.csd.uwo.ca/ucnc2014>

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**International Conference on Unconventional Computation and Natural Computation**  
July 14-18, 2014

**Western University**  
London Ontario Canada

**Conference Chairs:**  
Dr. Mark Daley and Dr. Lila Kari

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Conference starts: July 14 - July 18, 2014

**Workshops:** Computer of Theory & Experiment, Big Data, Physics of Computation, Social Net

**Tutorials:** Cellular Automata, Fractal Geometry, Quantum Computing, Hyper-Text

**Invited Speakers:** Henry Chang, Freda D. M. Martin, Bob Conner, Ronald Reagan, D. Lee Spector, A.G. Bell, Nikola Tesla, Thomas Edison

For more information visit: <http://www.csd.uwo.ca/ucnc2014>

Western University logo

**WESTERN UNIVERSITY PRESENTS**  
**UCNC 2014**  
Unconventional Computation & Natural Computation  
DR. MARK DALEY | DR. LILA KARI

**INVITED SPEAKERS:**  
• NORMAN FERNANDEZ (Uguel University)  
• GRIFFITH MACDONALD (University of Toronto)  
• FRANCISCA BLACKWOOD (University of Toronto)  
• BERT C. FROSTHOFF II (WPI/Laurel University)

**WORKSHOPS:**  
• PHYSION AND COMPUTATION (Paul Johnson)  
• LANGUAGE THEORY IN BIOINFORMATICS (Mary-Jane Heule)

**TUTORIALS:**  
• CELLULAR AUTOMATA (Walter S. Ruml) | • ALGORITHMIC BIOINFORMATICS (Lakshmi Havel) | • QUANTUM INFORMATION (Oswald Lovett)

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LONDON, ONTARIO, CANADA  
**JULY 14-18, 2014**  
[WWW.CSD.UWO.CA/UCNC2014](http://WWW.CSD.UWO.CA/UCNC2014)

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**Western University - CANADA**  
UNIVERSITY - ONTARIO, CANADA

**UCNC 2014 - Unconventional Computation & Natural Computation**

**INVITED SPEAKERS:**  
• Brad Pitt (Award Winner)  
• Adam Lovett  
• Emma Swain  
• Emma Watson (Award Winner)

**Conference Chairs:**  
Dr. Mark Daley  
Dr. Lila Kari

**TUTORIALS:**  
• DATA COMPRESSION-JOHN DOE  
• DATABASES-TIM SMITH  
• DATA STORAGE-JANE DOE

**WORKSHOPS:**  
• PHYSICS AND COMPUTATION-JOHN DOE  
• COMPUTER SCIENCE-JANE DOE

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**Western University 13th International Conference on Unconventional Computation and Natural Computation**

July 14-18, 2014  
Western University, London, Ontario, Canada

**Conference Chairs**  
Dr. Mark Daley & Dr. Lila Kari  
<http://www.csd.uwo.ca/uncnc2014>

**Invited Speakers**  
Brian Griffin - University of Waterloo  
Andrea Wilson - McMaster University  
Frederick Schmidt - McGill University  
Samuel Chang - University of Toronto

**Workshops**  
Physics and Computing - Barrie Rubble  
BioChemIT - Sandra Goergio

**Tutorials**  
DNA Computing - Robert Browning  
Nanocomputing - Ashley Posilans  
Artificial Neural Networks - Cheryl Mok

**Important Dates**  
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**UCNC 2014 - UNCONVENTIONAL COMPUTATION & NATURAL COMPUTATION**

Western University

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**Workshops**  
Physics and Computation: Doh Chuan  
General Computation: John Burch

**Tutorials**  
Quantum Information: All Brier  
Health Informatics: Henry Fagan  
Verbal Memory: Jesse Delle

**Invited Speakers**  
George Gheorghiu: McMaster University, Hamilton  
Neil F. Johnson: Queen's University, Kingston  
Elisabeth R. Hancock: University of Toronto, Toronto  
Ken Eason: Western University, London

**Conference Chairs**  
Dr. Mark Daley and Dr. Lila Kari

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Western University, London, Ontario, Canada

**13th International Conference on Unconventional Computation and Natural Computation**

July 14 - 18, 2014  
Western University, London, Ontario, Canada  
Conference Chairs: Dr. Mark Daley and Dr. Lila Kari

**Invited Speakers**  
Natalia Olliver - York University  
Neil Johnson - Queen's University  
Samuel Chang - University of Toronto  
Brian Griffin - University of Waterloo  
Andrea Wilson - McMaster University  
Frederick Schmidt - McGill University  
Samuel Chang - University of Toronto

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July 14 - 18, 2014  
Western University, London, ON, Canada

**Invited Speakers from Western University, Canada:**  
Jamie Fish  
Laina Smith  
Joyce Sacks  
Norm Lax

**Tutorials:**  
DNA Computing - Blair Minceer  
Molecular Computing - Ryan Wootton  
Quantum Computing - Josh Brinkish

**Workshops:**  
Cellular Computing - Kevin Malak  
Synthetic Biology - Matt Prussky

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**DR. MARK DALEY  
DR. LILA KARI**  
CONFERENCE CHAIRS

**Western University 13th International Conference on Unconventional Computation and Natural Computation**

July 14-18, 2014  
Western University, London, Ontario, Canada

**Conference Chairs**  
Dr. Mark Daley & Dr. Lila Kari

**Invited Speakers**  
Chuck Reents - University of Toronto  
Mike Tyson - University of Ottawa  
Paul Lu - McMaster University  
Mary Ise - Carleton University

**TUTORIALS**  
Biology - Samy Jean  
Singularity - Marshall Erikson  
Architecture - Ted Mosby

**WORKSHOPS**  
Quantum engineering - Sheldon Cooper  
Theoretical Physics - Henry Langdon

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**CONTACT US**  
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**13th International Conference on Unconventional Computation and Natural Computation**

July 14 - 18, 2014  
Western University, London, Ontario, Canada  
Conference Chairs: Dr. Mark Daley and Dr. Lila Kari

**Invited Speakers**  
Andrew Aiken - University of California, Berkeley  
Andrew Aiken - University of Alberta, Canada  
Norman Hurte - York University, Canada  
Srinivas Aravamudan - Google, South Africa

**Tutorials**  
Algebraic Topological Models - Samy Jean  
Mathematics and Informatics - Samy Jean  
Theory and Analytical Computing - Linda Schultz

**Workshops**  
Formal and Descriptive Languages - Samy Jean  
Automated Query Answering - Leah Davies

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## UCNC 2014 - Unconventional Computation & Natural Computation

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**Conference Chairs**

- Dr. Mark Daley
- Dr. Lila Kart

**JULY 2014**

ONE Taking place July 14-18, 2014  
WESTERN UNIVERSITY, LONDON, ONTARIO, CANADA

**Invited Speakers:** Eyal Seidenberg (University of Toronto), Michael J. Heule (University of Illinois), David Borrajo (University of Toronto), Frank Hees (University of Duisburg-Essen)

**Tutorials:** Quantum Information (Charles H. Bennett), Cellular Automata (Tommaso Toivola), Evolutionary Computation (Michael Heule)

**Workshops:** Physics & Computation (Omar N. Elmaghrabi), Hypercomputation (Sherry Sheu)

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# UCNC

## 2014

Unconventional Computation & Natural Computation

**WITH CONFERENCE CHAIRS**  
Dr. Mark Daley and Dr. Lila Kart

**INVITED SPEAKERS**  
Sebastian Brooks - University of Toronto, Canada  
Eyal Seidenberg - McGill University, Canada  
Charles Brongers - University of Waterloo, Canada  
Elizabeth Burns - University of Ottawa, Canada

**TUTORIALS**  
Quantum Information - Fred Phayton  
Cellular Automata - Tommaso Toivola  
Membrane Computing - Daniel Smith

**WORKSHOPS**  
Physics and Computation - Mike Starnat  
Language Theory in Biocomputing - Lisa Boyle

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**WEBSITE**  
<http://csd.uwo.ca/ucnc2014>

**LOCATED AT**  
Western University,  
London, Ontario,  
Canada

July 14-18, 2014

Join us in London, Ontario, Canada

UCNC  
2014

Unconventional Computation & Natural Computation

**JULY 14-18**  
WESTERN UNIVERSITY,  
LONDON, ONTARIO, CANADA

**Chairs:**  
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Dr. Lila Kart

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**GUEST SPEAKERS**

- Mike Smith - Western University, CA
- Frank Hees - University of Toronto, CA
- James Wu - Ryerson University, CA
- James Lead - University of Waterloo, CA

**TUTORIALS**

- Quantum Information with Casey
- Media Information with Young
- Computation III with Michael

**NEW WORKSHOPS**

- Physics & Computation - Sally Ye
- Fractals & Fun - Mark Jones

For More Information Visit us at  
<http://www.csd.uwo.ca/ucnc2014>

UCNC  
2014

UNCONVENTIONAL  
COMPUTING &  
NATURAL COMPUTATION

**JULY 14 - 18, 2014**  
Western University, London, Ontario, Canada

**INVITED SPEAKERS**

- Tom Wu - Western University, Canada
- Don Goebel - Brock University, Canada
- Nyle Ansholt - Carleton University, Canada
- Kate Kendall - Ryerson University, Canada

**TUTORIALS**

- Quantum Protocols - Tracy Cai
- Evolutionary Computation - Lynn Peng
- Algorithmic Game Theory - David Steiner
- Using Robot Computation - Rob Butler

**WORKSHOPS**

- Physics and Computation - Fred Phayton
- Membrane Computing - Daniel Smith
- Reversible Computing - Robert Doney Jr.

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Western University

UCNC/2014

Unconventional Computation & Natural Computation  
July 14-18, 2014  
Western University,  
London, Ontario, Canada

**13<sup>th</sup> International Conference  
An Unconventional Computation & Natural Computation**

**Chairs:** Dr. Mark Daley & Dr. Lila Kart

**Invited Speakers:** Peter Latham (University of Waterloo, Canada), Raymond E. Bryant (University of Toronto, Canada), Nancy Freitag (University of Toronto, Canada), Paul Taylor (University of Toronto, Canada)

**Tutorials:** Robert Doney Jr. (University of Toronto, Canada), Reversible Computation - Victor Serezhnev, Quantum Information - Richard Pitt

**Workshops:** Physics and Computation - Fred Phayton, Membrane Computing - Daniel Smith

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- Nancy Freitag - University of Toronto, Canada
- Paul Taylor - University of Toronto, Canada

**Tutorials**

- Robert Doney Jr. - University of Toronto, Canada
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