

Cyrus Omar

Computer Science Department
School of Computer Science
Carnegie Mellon University
5000 Forbes Avenue
Pittsburgh, PA 15213

Phone: (302) 743-1494
Office: 9003 Gates-Hillman Center
Email: comar@cs.cmu.edu
Homepage: <http://cs.cmu.edu/~comar>
Citizenship: US

Education

Carnegie Mellon University

Ph.D. in Computer Science (2010-present, expected Spring 2017)

Advisor: Jonathan Aldrich

Thesis: *Reasonably Programmable Syntax*

Center for the Neural Basis of Cognition

Graduate Training Program (2010-present)

PhD Program in Neural Computation (2008-2010)

University of Illinois at Urbana-Champaign

B.S. in Computer Science, *summa cum laude*, 2008

B.S. in Molecular & Cellular Biology, *summa cum laude*, 2008

GPA: 3.99 / 4.00

Internships

Los Alamos National Lab

Synthetic Cognition Group (May-August 2010)

Advisor: Garrett Kenyon

Fellowships & Individual Awards

1. Alan J. Perlis SCS Graduate Student Teaching Award
2. DOE Computational Science Graduate Fellowship
3. NSF Graduate Research Fellowship
4. Inductee, University of Illinois Bronze Tablet
5. Duncan H. Lawrie Leadership Award
6. Franz Hohn and J. P. Nash Scholarship

Research

Research Interests: Adaptable and intelligent programming languages and programming environments.

Peer-Reviewed Full Papers

1. Hazelnut: A Bidirectionally Typed Structure Editor Calculus
C. Omar, I. Voysey, M. Hilton, J. Aldrich and M. Hammer
44th ACM SIGPLAN Symposium on Principles of Programming Languages (POPL 2017)
2. Programmable Semantic Fragments: The Design and Implementation of typy
C. Omar and J. Aldrich.
15th ACM SIGPLAN International Conference on Generative Programming: Concepts & Experiences (GPCE 2016)
3. Safely Composable Type-Specific Languages
C. Omar, D. Kurilova, L. Nistor, B. Chung, A. Potanin and J. Aldrich.
28th European Conference on Object-Oriented Programming (ECOOP 2014)
Distinguished Paper Award
4. Active Code Completion.
C. Omar, Y. Yoon, T. D. LaToza and B. A. Myers
45th International Conference on Software Engineering (ICSE 2012)
5. Neural correlation is stimulus modulated by feedforward inhibitory circuitry
J. W. Middleton, C. Omar, B. Doiron and D. J. Simons
Journal of Neuroscience 32(2):506–18 (*J. Neurosci.* 2012)
6. A Feedback Information-Theoretic Approach to the Design of Brain-Computer Interfaces.
C. Omar, A. Akce, M. Johnson, T. Bretl, R. Ma, E. Maclin, M. McCormick and T. Coleman
International Journal of Human-Computer Interaction, 27:1, 5–23 (*IJHCI 2011*)

Peer-Reviewed Short Papers

7. Composable and Hygienic Typed Syntax Macros
C. Omar, C. Wang and J. Aldrich
30th ACM Symposium on Applied Computing (SAC 2015)
8. Statically Typed String Sanitation Inside a Python
N. Fulton, C. Omar and J. Aldrich
1st International Workshop on Privacy and Security in Programming (PSP 2014)
Best Paper Award
9. Collaborative Infrastructure for Test-Driven Scientific Model Validation
C. Omar, J. Aldrich and R. Gerkin
47th International Conference on Software Engineering (ICSE 2014)
New Ideas & Emerging Results Track (18% acceptance rate)
10. Language-Based Architectural Control
J. Aldrich, C. Omar, A. Potanin and D. Li
6th International Workshop on Aliasing, Capabilities and Ownership (IWACO 2014)
11. Type-Directed, Whitespace-Delimited Parsing for Embedded DSLs

C. Omar, B. Chung, D. Kurilova, A. Potanin and J. Aldrich
2013 International Workshop on the Globalization of Domain-Specific Languages (GlobalDSL 2013)

12. Policies for neural prosthetic control: initial experiments with a text interface

C. Omar, M. Johnson, T. Bretl and T. Coleman
2008 American Control Conference (ACC 2008)

13. Querying the user properly for high-performance brain machine interfaces: recursive estimation, control and feedback information theoretic perspectives

C. Omar, M. Johnson, T. Bretl and T. Coleman
2008 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2008)

14. Shedding the weights: more with less

T. Achler, C. Omar and E. Amir
2008 International Joint Conference on Neural Networks (IJCNN 2008)

Working Drafts

15. Reasonably Programmable Syntax

C. Omar and J. Aldrich
 Dissertation and accompanying journal paper in preparation
2nd Place, ICFP 2015 Graduate Student Research Competition

16. Hazelnut Live: Semantic Foundations for Evaluating Incomplete Programs

C. Omar, I. Voysey, M. Hilton, J. Aldrich and M. Hammer

17. Statistical Models of Typed Syntax Trees

C. Omar, S. Joshi and F. Cruz
3rd Place, SPLASH 2014 Graduate Student Research Competition

18. Tidy: A Modularly Programmable Bidirectionally Typed Translation Semantics

C. Omar and J. Aldrich

Selected Talks

1. Modularly Programmable Type Structure

Invited talk, TU Darmstadt (scheduled January 2017)

2. Hazel: Semantic Foundations for Interactive Programming Tools

Invited talk, HARC (Y Combinator Research), 2016
 IBM Programming Languages Day, 2016

3. Modular Syntax

Parsing@SLE Workshop, 2015

4. Modularly Programmable Syntax and Type Structure

CMU Principles of Programming Seminar, June 2015

5. Composable and Hygienic Typed Syntax Macros

Domain-Specific Language Design and Implementation Workshop (DSLDI 2014)

6. Active Typechecking and Translation
Domain-Specific Language Design and Implementation Workshop (DSLDI 2013)
nVidia GPU Technology Conference 2013
7. Open Science
Joint talk with Shreejoy Tripathy
Center for the Neural Basis of Cognition Brain Bag
8. Sound, Usable and Flexible Foundations for Scientific and High-Performance Languages and Tools
SIAM Conference on Parallel Processing for Scientific Computing (PP 2012)
9. End-User Programming by Scientists
Lecture, Human Aspects of Software Development (Spring 2011)
10. How do people naturally think about computation?
Lecture, Human Aspects of Software Development (Spring 2011)

Selected Press Coverage

1. GigaOm (Aug. 7, 2014)
2. Motherboard (Aug. 8, 2014)
3. ACM TechNews (Aug. 11, 2014)
4. Gizmodo (Aug. 11, 2014)
5. SD Times (Aug. 13, 2014)
6. ITBusinessEdge (Aug. 14, 2014)
7. The Tartan (Aug. 24, 2014)

Teaching

Carnegie Mellon University

- Principles of Programming Languages (15-312)
Head TA, Spring 2013 with Prof. R. Harper
- Functional Programming (15-150)
Head TA, Fall 2011 with Prof. D. Licata

Service

1. Publicity Chair and Program Committee, GPCE 2017
2. Program Committee, DSLDI 2015
3. Artifact Evaluation Committee, ECOOP 2015
4. CSD Graduate Admissions Committee, 2013
5. CNBC Social Committee, 2011

Advising

Undergraduates (year; co-advisor; subsequent placement)

1. A. Benson (2016; Prof. J. Aldrich; Facebook)
2. C. Wang (2015; Prof. J. Aldrich; PhD student, University of Washington)
3. B. Chung (2014; Prof. J. Aldrich; PhD student, Northeastern University)
4. N. Fulton (2012; Prof. J. Aldrich; PhD student, Carnegie Mellon University)
5. M. Rule (2009; Prof. N. Urban; PhD student, Brown University)

Last updated: December 14, 2016