Cyrus Omar

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Employment

University of Michigan

Assistant Professor (September 1, 2019-present)

Director, Future of Programming (FP) Lab

Computer Science and Engineering (CSE) Division

Electrical Engineering and Computer Science (EECS) Department

University of Chicago

Postdoctoral Scholar (September 1, 2017-August 31, 2019)

Department of Computer Science

Advisor: Ravi Chugh

Education

Carnegie Mellon University

Ph.D. in Computer Science (October 2010-May 2017)

Advisor: Jonathan Aldrich

Thesis: *Reasonably Programmable Syntax*

Thesis Committee: Jonathan Aldrich, Robert Harper, Karl Crary and Eric Van Wyk

Center for the Neural Basis of Cognition

Graduate Training Program (October 2010-May 2017)

PhD Program in Neural Computation (August 2008-October 2010)

University of Illinois at Urbana-Champaign

B.S. in Computer Science, 2008

B.S. in Molecular & Cellular Biology, 2008

Internships

Los Alamos National Lab

Synthetic Visual Cognition Group (May 2010-August 2010)

Advisor: Garrett Kenyon

Fellowships & Individual Awards

1. Alan J. Perlis SCS Graduate Teaching Award (1 per year across all CMU SCS departments)
2. DOE Computational Science Graduate Fellowship (4.5% acceptance rate)
3. NSF Graduate Research Fellowship (10% acceptance rate)
4. Inductee, University of Illinois Bronze Tablet (3% of UIUC graduating seniors)

Research

Primary Research Area: programming languages
Secondary Research Areas: human-computer interaction, software engineering, artificial intelligence

Peer-Reviewed Full Papers

1. Live Functional Programming with Typed Holes
   C. Omar, I. Voysey, R. Chugh and M. Hammer
   Proc. ACM Program. Lang. 3, POPL, Article 14 **(POPL 2019)**
2. Reasonably Programmable Literal Notation
   C. Omar and J. Aldrich
   Proc. ACM Program. Lang. 2, ICFP, Article 106 **(ICFP 2018)**
3. 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)**
4. 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)**
5. 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
6. 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
7. Active Code Completion.
   C. Omar, Y. Yoon, T. D. LaToza and B. A. Myers
   45th International Conference on Software Engineering **(ICSE 2012)**
8. 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)**

9. 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

10. Toward Semantic Foundations for Program Editors
    C. Omar, I. Voysey, M. Hilton, J. Sunshine, C. Le Goues, J. Aldrich and M. Hammer
    2nd Summposium on Advances in Programming Languages **(SNAPL 2017)**
11. Composable and Hygienic Typed Syntax Macros
    C. Omar, C. Wang and J. Aldrich
    30th ACM Symposium on Applied Computing **(SAC 2015)**
12. 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)
13. Language-Based Architectural Control
    J. Aldrich, C. Omar, A. Potanin and D. Li
    6th International Workshop on Aliasing, Capabilities and Ownership **(IWACO 2014)**
14. 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)**
15. 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)**
16. 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)**
17. Shedding the weights: more with less
    T. Achler, C. Omar and E. Amir
    2008 International Joint Conference on Neural Networks **(IJCNN 2008)**

Selected Talks

1. Accepted talk, TyDe 2019
2. Invited talk, Chicago Functional Programming Meetup + Reason Meetup (joint talk), 2018
3. Accepted talk, LIVE 2018
4. Accepted talk, META 2018
5. Invited talk, CMU Principles of Programming Seminar, 2018

6. Accepted talk, Strange Loop, 2018
7. Invited talk, Ink & Switch, 2018
8. Invited talk, Purdue University, 2017
9. Invited talk, TU Darmstadt, 2017
10. Accepted talk, LIVE 2017
11. Invited talk, HARC (Y Combinator Research), 2016

Teaching

University of Michigan

Fall 2019 Special Topics: User Interfaces for Programming Languages (EECS 598)

Carnegie Mellon University

Spring 2013 Principles of Programming Languages (15-312)
Head TA, with Prof. Robert Harper

Fall 2011 Functional Programming (15-150)
Head TA, with Prof. Dan Licata

Advising

University of Michigan

PhD Students (year)

1. David Moon (2019-present)

Research Scientists

1. Michael D. Adams (2019-present)

Prior to Faculty Position

PhD Students (year; faculty advisor)

1. David Moon (2018-2019; Matthew A. Hammer)
2. Nick Collins (2018-present; Ravi Chugh)

Undergraduates (year; faculty advisor; subsequent placement)

1. Ian Voysey (2016-present; -; Staff Programmer, Carnegie Mellon University)
2. Charles Chamberlain (2017-present; -; Jane Street Capital)
3. Andrew Benson (2016; Jonathan Aldrich; Facebook)
4. Chenglong Wang (2015; Jonathan Aldrich; PhD student, University of Washington)
5. Benjamin Chung (2014; Jonathan Aldrich; PhD student, Northeastern University)
6. Nathan Fulton (2012; Jonathan Aldrich; PhD student, Carnegie Mellon University)
7. Michael Rule (2009; Nathan Urban; PhD student, Brown University)

External Service

1. Co-Chair, Midwest PL Summit (MWPLS) 2020
2. Co-Chair, Type-Driven Development (TyDe) workshop at ICFP 2020
3. External Review Committee, ICFP 2020
4. Program Committee, Onward! Papers 2019
5. Program Committee, LIVE 2019
6. Program Committee, META 2019
7. Program Committee, ML Family Workshop 2019
8. Artifact Evaluation Committee, ICFP 2019
9. Program Committee, LIVE 2018
10. Program Committee, SPLASH Student Research Competition 2018
11. Referee, Journal of Visual Languages and Computing 2018
12. Program Committee, META 2017
13. Publicity Chair and Program Committee, GPCE 2017
14. Program Committee, DSLDI 2015
15. Artifact Evaluation Committee, ECOOP 2015

Departmental Service

1. Member, CSE Diversity Committee, 2019 AY

Funding

NSF Small: Semantic Foundations for Hole-Driven Development ($192,635, 2019-2021)
Co-PI with Ravi Chugh

Last updated: November 13, 2019