Cyrus Omar

Computer Science and Engineering
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Employment

University of Michigan

Assistant Professor (September 1, 2019-present)

Future of Programming Lab (FP Lab)

Computer Science and Engineering (CSE) Division

Electrical Engineering and Computer Science (EECS) Department

College of Engineering

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*

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. Program Sketching with Live Bidirectional Evaluation
   J. Lubin, N. Collins, <u>C. Omar</u>, and R. Chugh
   Proc. ACM Program. Lang. 4, ICFP, Article 109 **(ICFP 2020)**

2. Live Functional Programming with Typed Holes
   <u>C. Omar</u>, I. Voysey, R. Chugh and M. Hammer
   Proc. ACM Program. Lang. 3, POPL, Article 14 **(POPL 2019)**

3. Reasonably Programmable Literal Notation
   <u>C. Omar</u> and J. Aldrich
   Proc. ACM Program. Lang. 2, ICFP, Article 106 **(ICFP 2018)**

4. Toward Semantic Foundations for Program Editors
   <u>C. Omar</u>, I. Voysey, M. Hilton, J. Sunshine, C. Le Goues, J. Aldrich and M. Hammer
   2nd Symposium on Advances in Programming Languages **(SNAPL 2017)**

5. Hazelnut: A Bidirectionally Typed Structure Editor Calculus
   <u>C. Omar</u>, I. Voysey, M. Hilton, J. Aldrich and M. Hammer
   44th ACM SIGPLAN Symposium on Principles of Programming Languages **(POPL 2017)**

6. Programmable Semantic Fragments: The Design and Implementation of `typy`
   <u>C. Omar</u> and J. Aldrich.
   15th ACM SIGPLAN International Conference on Generative Programming: Concepts & Experiences **(GPCE 2016)**

7. Composable and Hygienic Typed Syntax Macros
   <u>C. Omar</u>, C. Wang and J. Aldrich
   30th ACM Symposium on Applied Computing **(SAC 2015)**

8. Safely Composable Type-Specific Languages
   <u>C. Omar</u>, D. Kurilova, L. Nistor, B. Chung, A. Potanin and J. Aldrich.
   28th European Conference on Object-Oriented Programming **(ECOOP 2014)**
   Distinguished Paper Award

9. Statically Typed String Sanitation Inside a Python

N. Fulton, <u>C. Omar</u> and J. Aldrich

1st International Workshop on Privacy and Security in Programming **(PSP 2014)**

Best Paper Award

10. Collaborative Infrastructure for Test-Driven Scientific Model Validation

    <u>C. Omar</u>, J. Aldrich and R. Gerkin

    47th International Conference on Software Engineering **(ICSE 2014)**

    New Ideas & Emerging Results Track (18% acceptance rate)

11. Active Code Completion.

    <u>C. Omar</u>, Y. Yoon, T. D. LaToza and B. A. Myers

    45th International Conference on Software Engineering **(ICSE 2012)**

12. Neural correlation is stimulus modulated by feedforward inhibitory circuitry

    J. W. Middleton, <u>C. Omar</u>, B. Doiron and D. J. Simons

    Journal of Neuroscience 32(2):506–18 **(J. Neurosci. 2012)**

13. A Feedback Information-Theoretic Approach to the Design of Brain-Computer Interfaces.

    <u>C. Omar</u>, 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)**

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

    <u>C. Omar</u>, M. Johnson, T. Bretl and T. Coleman

    2008 American Control Conference **(ACC 2008)**

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

    <u>C. Omar</u>, M. Johnson, T. Bretl and T. Coleman

    2008 IEEE International Conference on Acoustics, Speech, and Signal Processing **(ICASSP 2008)**

16. Shedding the weights: more with less

    T. Achler, <u>C. Omar</u> and E. Amir

    2008 International Joint Conference on Neural Networks **(IJCNN 2008)**

Peer-Reviewed Workshop Papers

17. Hazel Tutor: Guiding Novices Through Type-Driven Development

    H. Potter and <u>C. Omar</u>

    1st Workshop on Human Aspects of Types and Reasoning Assistants **(HATRA 2020)**

18. RustViz: Interactively Visualizing Ownership and Borrowing

    G. Luo, V. Reddy, M. Almeida, Y. Zhu, K. Du, and <u>C. Omar</u>

    1st Workshop on Human Aspects of Types and Reasoning Assistants **(HATRA 2020)**

19. Language-Based Architectural Control

    J. Aldrich, <u>C. Omar</u>, A. Potanin and D. Li

    6th International Workshop on Aliasing, Capabilities and Ownership **(IWACO 2014)**

20. Type-Directed, Whitespace-Delimited Parsing for Embedded DSLs

    <u>C. Omar</u>, B. Chung, D. Kurilova, A. Potanin and J. Aldrich

    2013 International Workshop on the Globalization of Domain-Specific Languages **(GlobalDSL 2013)**

Selected Talks

1. Accepted Talk, Midwest PL Summit 2020
2. Accepted talk, TyDe 2019
3. Invited talk, Chicago Functional Programming Meetup + Reason Meetup (joint talk), 2018
4. Accepted talk, LIVE 2018
5. Accepted talk, META 2018
6. Invited talk, CMU Principles of Programming Seminar, 2018
7. Accepted talk, Strange Loop, 2018
8. Invited talk, Ink & Switch, 2018
9. Invited talk, Purdue University, 2017
10. Invited talk, TU Darmstadt, 2017
11. Accepted talk, LIVE 2017
12. Invited talk, HARC (Y Combinator Research), 2016

Teaching

University of Michigan

EECS 490: Programming Languages
Winter 2020, Fall 2020, Winter 2021

EECS 598: User Interfaces for Programming Languages
Fall 2019

Carnegie Mellon University

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

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

Advising

University of Michigan

Postdocs and Research Scientists

1. Michael D. Adams (Fall 2019-present)

PhD Students

1. David Moon (Fall 2019-present)
2. Andrew Blinn (Fall 2020-present)
3. Eric Griffis (Fall 2020-present)

Masters Students

1. Hannah Potter (Fall 2019-present)
2. Erin Deutschman (Fall 2020-present)

Undergraduates (as of Apr. 15, 2020, updated yearly, see lab website for up-to-date list)

1. Benjamin Carney (Winter 2020-present)
2. Erin Deutschman (Winter 2020-Fall 2020)
3. Gabriel Luo (Fall 2019-present)
4. Nicholas Wilson (Winter 2020-present)
5. Ke Du (Fall 2019-present)
6. Qiran Li (Fall 2019-present)
7. Siyuan He (Winter 2020-present)
8. Yongwei Yuan (Fall 2019-present)
9. Dibyadarshi Dash (Winter 2020-present)
10. Marcelo Almeida (Winter 2020-present)
11. Mengjing Xu (Winter 2020-present)
12. Soo Yeon Lee (Winter 2020-present)
13. Utkarsh Mehta (Winter 2020-present)
14. Yingying Zhu (Winter 2020-present)
15. Yuanhao Meng (Winter 2020-present)
16. Yunsoo Kim (Winter 2020-present)
17. Yuning Wang (Winter 2020-present)
18. Zhiyi Pan (Winter 2020-present)
19. Aditya Koneru (Winter 2020-present)
20. Prashant Shankar (Winter 2020-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. Program Committee, ICFP 2021

2. Program Committee, LIVE 2020

3. Program Committee, HATRA 2020

4. Co-Chair, Midwest PL Summit (MWPLS) 2020 [cancelled due to COVID]

5. Co-Chair, Type-Driven Development (TyDe) workshop at ICFP 2020

6. External Review Committee, ICFP 2020

7. Student Research Competition Committee, ICFP 2020

8. Program Committee, HATRA 2020

9. Program Committee, Onward! Papers 2019

10. Program Committee, LIVE 2019

11. Program Committee, META 2019

12. Program Committee, ML Family Workshop 2019

13. Artifact Evaluation Committee, ICFP 2019

14. Program Committee, LIVE 2018

15. Program Committee, SPLASH Student Research Competition 2018

16. Referee, Journal of Visual Languages and Computing 2018

17. Program Committee, META 2017

18. Publicity Chair and Program Committee, GPCE 2017

19. Program Committee, DSLDI 2015

20. Artifact Evaluation Committee, ECOOP 2015

Internal Service

1. Member, CSE Diversity Committee, Fall 2019-present

   (a) Led revamp of DEI Website (ongoing)

   (b) Coordinated engagement with MS Admissions (ongoing)

   (c) Led development of the CSE Departmental Broadening Participation in Computing (BPC) Plan

   (d) Participated in the development of the Summer 2020 Graduate Student Individual Check-In program

2. Organizer, MPLSE (Michigan PL + SE) Group, Fall 2019-present

Funding

NSF Small: Semantic Foundations for Hole-Driven Development ($192,635, 2019-2021)
    Subcontract from CU Boulder

Last updated: January 21, 2021