Cyrus Omar

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Employment

University of Michigan

Assistant Professor (Sep. 2019-present)

Future of Programming Lab (FP Lab)

Computer Science and Engineering (CSE) Division

Electrical Engineering and Computer Science (EECS) Department

College of Engineering (COE)

University of Chicago

Postdoctoral Scholar (Sep. 2017-Aug. 2019)

Department of Computer Science

Supervisor: Ravi Chugh

Education

Carnegie Mellon University

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

Advisor: Jonathan Aldrich

Thesis: *Reasonably Programmable Syntax*

Center for the Neural Basis of Cognition

Graduate Training Program Certificate (Oct. 2010-May 2017)

PhD Program in Neural Computation (Aug. 2008-Oct. 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)

Supervisor: Garrett Kenyon

Fellowships & Individual Awards

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

Research

Primary Research Area: programming languages
Secondary Research Areas: human-computer interaction, educational technology, artificial intelligence

Peer-Reviewed Full Papers

1. RustViz: Interactively Visualizing Ownership and Borrowing
   M. Almeida, G. Cole, K. Du, G. Luo, S. Pan, Y. Pan, K. Qiu, V. Reddy, H. Zhang, Y. Zhu, C. Omar
   IEEE Symposium on Visual Languages and Human-Centered Computing **(VL/HCC 2022)**
2. An Integrative Human-Centered Architecture for Interactive Programming Assistants
   A. Blinn, D. Moon, E. Griffis, C. Omar
   IEEE Symposium on Visual Languages and Human-Centered Computing **(VL/HCC 2022)**
3. Filling Typed Holes with Live GUIs
   C. Omar, D. Moon, A. Blinn, I. Voysey, N. Collins, and R. Chugh
   42nd ACM SIGPLAN International Conference on Programming Language Design and Implementation **(PLDI 2021)**
4. Program Sketching with Live Bidirectional Evaluation
   J. Lubin, N. Collins, C. Omar, and R. Chugh
   Proc. ACM Program. Lang. 4, ICFP, Article 109 **(ICFP 2020)**
5. 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)**
6. Reasonably Programmable Literal Notation
   C. Omar and J. Aldrich
   Proc. ACM Program. Lang. 2, ICFP, Article 106 **(ICFP 2018)**
7. 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)**
8. 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)**
9. Composable and Hygienic Typed Syntax Macros

C. Omar, C. Wang and J. Aldrich
30th ACM Symposium on Applied Computing **(SAC 2015)**

10. 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
11. 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
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. Active Code Completion.
    C. Omar, Y. Yoon, T. D. LaToza and B. A. Myers
    45th International Conference on Software Engineering **(ICSE 2012)**
14. 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)**
15. 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)**
16. 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)**
17. 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)**
18. Shedding the weights: more with less
    T. Achler, C. Omar and E. Amir
    2008 International Joint Conference on Neural Networks **(IJCNN 2008)**

Peer-Reviewed Workshop Papers

19. Hazel Tutor: Guiding Novices Through Type-Driven Development
    H. Potter and C. Omar
    1st Workshop on Human Aspects of Types and Reasoning Assistants ***(HATRA 2020)***
20. RustViz: Interactively Visualizing Ownership and Borrowing

G. Luo, V. Reddy, M. Almeida, Y. Zhu, K. Du, and C. Omar
1st Workshop on Human Aspects of Types and Reasoning Assistants ***(HATRA 2020)***

21. Toward Semantic Foundations for Program Editors
    C. Omar, I. Voysey, M. Hilton, J. Sunshine, C. Le Goues, J. Aldrich and M. Hammer
    2nd Symposium on Advances in Programming Languages **(SNAPL 2017)**
22. Language-Based Architectural Control
    J. Aldrich, C. Omar, A. Potanin and D. Li
    6th International Workshop on Aliasing, Capabilities and Ownership **(IWACO 2014)**
23. 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)**

Selected Talks

1. Invited talk, Ink & Switch, May 2022
2. Invited talk, University of Toledo, Feb 2022
3. Invited talk, University of Washington, December 2021
4. Invited talk, Strumenta Community, December 2021
5. Invited talk, UC Berkeley, October 2021
6. Invited talk, UC San Diego, Summer 2021
7. Invited talk, Hackworth Ltd., Summer 2021
8. Invited talk, Webflow, Summer 2021
9. Invited Talk, PPIG 2020
10. Accepted talk, Midwest PL Summit 2019
11. Accepted talk, TyDe 2019
12. Invited talk, Chicago Functional Programming Meetup + Reason Meetup (joint talk), 2018
13. Accepted talk, LIVE 2018
14. Accepted talk, META 2018
15. Invited talk, CMU Principles of Programming Seminar, 2018
16. Accepted talk, Strange Loop, 2018
17. Invited talk, Ink & Switch, 2018
18. Invited talk, Purdue University, 2017
19. Invited talk, TU Darmstadt, 2017
20. Accepted talk, LIVE 2017
21. Invited talk, HARC (Y Combinator Research), 2016

Teaching

University of Michigan

EECS 490: Programming Languages

Winter 2020, Fall 2020, Winter 2021, Fall 2021, Winter 2022

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 (advising period; subsequent placement)

1. Michael D. Adams (Fall 2019-Winter 2021; Assistant Professor at Yale-NUS)

PhD Students (advised)

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

PhD Students (committee membership)

1. Xiaoying Pu (CSE, scheduled to defend 2022)
2. April Wang (School of Information, scheduled to defend 2023)

Masters Students

1. Jonathan Lam (MS student at Cooper Union, Fall 2021-present)
2. Priya Thanneermalai (Summer 2021-present)
3. Soo Yeon (Sean) Lee (Winter 2020-present)
4. Hannah Potter (Fall 2019-Summer 2021; PhD student at University of Washington)
5. Erin Deutschman (Winter 2020-Summer 2021; industry position)

Undergraduates (the following lists students who went on to PhD programs only)

1. Siyuan He (Winter 2020-Summer 2021; PhD student at Purdue University)
2. Yuning Wang (Winter 2020-Summer 2021; PhD student at Rutgers University)
3. Yongwei Yuan (Fall 2019-Summer 2020; PhD student at Purdue University)
4. Ke Du (Fall 2019-Summer 2020; PhD student at UIC)

5-47. (43 other undergraduate research students as of Aug 1, 2021, see lab website for full listing)

Prior to Faculty Position

Undergraduates (year; faculty advisor; subsequent placement)

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

External Service

1. Program Committee and Area Chair (Brave New Ideas and Pearls), ECOOP 2023
2. Program Committee, SPLASH Student Research Competition (SPLASH SRC) 2022
3. Steering Committee Chair, TyDe (2022-2024)
4. Program Committee, VL/HCC 2022
5. Program Committee, HATRA 2021
6. External Reviewer, UIST 2021
7. Program Committee, ICFP 2021
8. Program Committee, LIVE 2020
9. Program Committee, HATRA 2020
10. Co-Chair, Midwest PL Summit (MWPLS) 2020 [canceled due to COVID]
11. Co-Chair, Type-Driven Development (TyDe) workshop at ICFP 2020
12. External Review Committee, ICFP 2020
13. Student Research Competition Committee, ICFP 2020
14. Program Committee, HATRA 2020
15. Program Committee, Onward! Papers 2019
16. Program Committee, LIVE 2019
17. Program Committee, META 2019
18. Program Committee, ML Family Workshop 2019
19. Artifact Evaluation Committee, ICFP 2019
20. Program Committee, LIVE 2018
21. Program Committee, SPLASH Student Research Competition 2018
22. Referee, Journal of Visual Languages and Computing 2018
23. Program Committee, META 2017
24. Publicity Chair and Program Committee, GPCE 2017
25. Program Committee, DSLDI 2015
26. Artifact Evaluation Committee, ECOOP 2015

Internal Service

1. Member, CSE Diversity Committee, Fall 2019-present
   (a) External engagement (ongoing)
   (b) Led revamp of DEI Website (ongoing)
   (c) Coordinated engagement with MS Admissions (ongoing)
   (d) Led development of the CSE Departmental Broadening Participation in Computing (BPC) Plan
   (e) Participated in the development of the Summer 2020 Graduate Student Individual Check-In program
2. Member, CSE Hosting Committee, Fall 2020-present
3. Organizer, MPLSE (Michigan PL + SE) Group, Fall 2019-present
4. Mentor, Girls Encoded / Explore CS Research program, Winter 2021
5. Mentor, African Undergraduate Research Adventure (AURA) program, Summer 2021
6. Mentor, Summer Undergraduate Research in Engineering (SURE) program, Summer 2020, 2021

Funding

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

Last updated: June 20, 2022