Moez A. AbdelGawad is currently an Assistant Professor of Quantum Informatics and Programming Languages at the Informatics Research Institute (IRI), SRTA-City (Alexandria, Egypt). Since 2020, Dr. AbdelGawad has also continuously been a Remote Visiting Scientist at the Computer Science department, Rice University (Houston TX, USA) and on and off an Adjunct Assistant Professor at the Computer & Systems Engineering department (earlier, Computer Science dept.), Faculty of Engineering, Alexandria University (Alexandria, Egypt).

Dr. AbdelGawad's current research focus is on analyzing and finding efficient quantum algorithms for some useful but classically intractable problems, using a quantum informatics approach and tools of spectral and algebraic graph theory. Examples include finding an efficient quantum algorithm for the graph isomorphism problem, and more generally efficiently solving the non-commutative hidden subgroup problem (HSP). To aid quantum algorithms researchers and students Dr. AbdelGawad has recently authored QAL (Quantum Algorithms Lab) as an innovative visual interactive web app for researching and teaching quantum algorithms and related mathematical fields (such as linear algebra and group theory). Dr. AbdelGawad is in the process of patenting the novel software technologies he invented and developed for use in QAL.

Dr. AbdelGawad also authored several papers on the semantics of generic nominally-typed OO programming languages such as Java, C#, Kotlin, C++, and Scala. He has also published a poster in 2019 at the Applied Category Theory conference, Oxford University, UK, on a category-theoretic model of generic nominally-typed OO type systems. His popular informal publications include three preprints on 'induction, coinduction, and fixedpoints'. Others include preprints on partial graph products, on nominal typing versus structural typing in OOP, and on the subtyping relation in generic OOP being a fractal.

Dr. AbdelGawad earned his Ph.D. in 2011 at the Computer Science department, Rice University (Houston TX, USA). In his Ph.D. thesis Dr. AbdelGawad, while working with Prof. Robert Cartwright, presented NOOP as a precise mathematical model of nominally-typed OOP. NOOP enabled him to prove, for the first time in programming languages research, that inheritance and OO subtyping are completely identified in mainstream OOP.

Domain Theory is the mathematical framework for defining the semantics of programming languages and by extension the specification of sophisticated software systems. Dr. AbdelGawad used domain theory to build NOOP as a model of mainstream OOP. Based on his experience with publishing his Ph.D. thesis as a book, he is also interested in publishing a domain theory primer (introductory textbook) based on the domain theory monograph he co-authored with Prof. Robert Cartwright and Rebecca Parsons in 2016. A draft of the book is available online on arXiv.[1]

In 2013 Dr. AbdelGawad published his Ph.D. research at ISDT'13 (the International Symposium on Domain Theory 2013) in Changsha, China.[2] During 2014 he was an Adjunct Assistant Professor at the Computer Science department, Egypt-Japan University of Science & Technology (Alexandria, Egypt). Afterwards, during 2015 & 2016, he was a Visiting Scientist at the College of Mathematics, Hunan University (Changsha, China). During his one-year research visit to China, Dr. AbdelGawad got more familiar with Category Theory and its applications to the sciences, in addition to lecturing on his modeling of OOP using Domain Theory. In 2005 he also interned with Prof. Martin Odersky on developing the Scala compiler at the Computer Science department, Ecole Polytechnique Federale-Lausanne (EPFL), Lausanne, Switzerland.

Dr. AbdelGawad earlier earned his M.Sc. and B.Sc. at the Computer Science department, Faculty of Engineering, Alexandria University, Egypt. In his M.Sc. thesis, while working with Prof. Ahmed Belal in 2001, he presented 2DEM as a novel encryption mode, the 2D Encryption Mode. 2DEM was presented at SPIE's 2002 conference in Seattle WA, USA. In his B.Sc. graduation project he worked with teammates, under the supervision of Prof. Mohamed AbdelHamid Ismail in 1997, on automated Human Face Recognition (HFR) using Neural Networks.

Dr. AbdelGawad has strong interest in improving STEM education (particularly math education and computer programming education) using smart devices, games, and toys (e.g., Rubik's Cube, SET, ZomePad, Lego, ... etc.) Dr. AbdelGawad strongly shares with many scientists and researchers the goal of making mathematics and programming appeal to much wider sections of the society and the general public.

As you may expect by now, Dr. AbdelGawad loves to play with Rubik's Cube (whose group of moves is a *non-commutative* group) and recreational games such as SET, Mekorama, Sokoban, ... etc. In 2009 he authored the *first* Arabic-language YouTube videos to explain how to solve Rubik's Cube. Dr. AbdelGawad also loves diverse reading, such as reading the Qur'an and its various interpretations, history (of science) books, improving his German language skills, ... etc. Time-permitting, he also likes open-air walking, jogging, playing soccer, and, indoors, he enjoys playing ping pong (table tennis).

For more information on Dr. AbdelGawad's professional (and recreational) activities you may check his CV, available on his webpage.

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[1] Dr. AbdelGawad adapted and published his Ph.D. thesis as a book in 2013, under the title 'NOOP: A Nominal Mathematical Model of Object-Oriented Programming.'

[2] ISDT'13 was attended by Turing Award-recipient Emeritus Prof. Dana Scott. (Turing Award is "the Nobel Prize of Computer Science.")