Curriculum Vitae

Islam A. ElShaarawy, Ph.D., PGCHE, FHEA
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Personal Information:

- **Nationality**: Egyptian
- **Date of Birth**: November 1st, 1980
- **Marital Status**: Married (two daughters)
- **Military Service**: Completed

Education:

- **PGCert**: Higher Education (Jul 2019)
  - Faculty of Education and Health
  - University of Greenwich
  - **Recognition**: Fellow of the Higher Education Academy, United Kingdom (`PR171169`)
- **Ph.D.**: Computer Science and Engineering (Aug 2014)
  - School of Electronics, Communications, and Computer Engineering
  - Egypt-Japan University for Science and Technology (E-JUST)
  - **Thesis Title**: "*Computing Dynamical Systems at Finite Resolution with Applications*"
  - **Grade**: 3.85
- **M.Sc.**: Computer Systems Engineering (Jun 2008)
  - Faculty of Engineering (at Shoubra)
  - Benha University
  - **Thesis Title**: "*Quantum Cryptography: Privacy through Uncertainty*"
  - **Grade**: Very Good
- **B.Sc.**: Computer Systems Engineering (May 2002)
  - Faculty of Engineering (at Shoubra)
  - Benha University
  - **Graduation Grade**: Very Good with Honor Degree (**Ranked The First**)
  - **Graduation Percentage**: 84.35%
  - **Graduation Project Grade**: Excellent
  - **Graduation Project Title**:
        "*Signature Verification: Biometric based Security System using ANN*"

General Skills:

- Effective Research and Development Capabilities
- Efficient Algorithm Design and Implementation
- More than 25 Years of Experience in Software Development
- Team Player with Leadership, Conflict Management, and Problem Solving Capabilities

Languages:

- Arabic (Mother Tongue)
- English (98 TOEFL iBT)

Work Experience:

- (August 2020 – present)
  - **Chief Information Officer (CIO)**
  - Benha University
- (Feb 2018 – present)
  - **Assistant Professor**
  - October University for Modern Sciences and Arts (MSA)
- (Oct 2016 – July 2020)
  - **Director of Electronic and Knowledge Services Unit & Digital Transformation Unit**
  - Benha University
- (Oct 2014 – present)
  - **Assistant Professor**
  - Benha University – Faculty of Engineering (at Shoubra)
- (Sep 2016 – Jan 2017)
  - **Visiting Assistant Professor**
  - Nile University – School of Communications & Information Technology
  - Misr International University – Faculty of Computer Science
- (Aug 2010 – Dec 2012)
  - **GIS Specialist**
  - PROSYLAB – Enterprise GIS for General Organization of Physical Planning
- (Oct 2008 – Oct 2014)
  - **Assistant Lecturer**
  - Benha University – Faculty of Engineering (at Shoubra)
- (Jan 2007 – Jan 2008)
  - **System Analyst**
  - PROTRAC – The National Project for Automating Agricultural and Land Registry
- (Jan 2003 – Feb 2004)
  - **System Developer**
  - Egyptian Armed Forces – Organization and Administration Authority for the Armed Forces
- (Nov 2002 – Oct 2008)
  - **Teaching Assistant**
  - Benha University – Faculty of Engineering (at Shoubra)
- **Tens** of freelancing projects in many countries across the world

Academic Projects:

- HEEPF
  - **Project Title**: Engineering Development of The Geomatics Educational Courses Based on The Society Needs (ENDGEOS)
  - **Organization**: Faculty of Engineering (at Shoubra), Benha University
- FOEP
  - **Project Title**: Faculty Development Project in Educational Aids (PMU_HEEPF_FOEP_BEN2)
  - **Organization**: Faculty of Education, Benha University

Fields of Interest:

- Computing Dynamical Systems
- High Precision Floating Point Arithmetic
- Computer Modeling and Simulation

- Geomatics and Geographical Information Systems (GIS)
- Computational Geometry
  - Spatial Data Indexing (Raster/Vector)
  - Clustering, Covering, Cutting, and Tiling Algorithms
- Artificial Intelligence (AI), Machine Learning, and Expert Systems (ES):
  - Game Playing, Autonomous Systems
  - Fuzzy Logic (FL)
  - Evolutionary Algorithms (GA/MA)
  - Artificial Neural Networks and Pattern/Speech/Voice Recognition
    - Designing ANN inspired by Human Nervous System, especially Visual System
    - Using Neural Network Toolbox – MATLAB and other tools like NeuroSolutions
    - Developing custom ANN
- Data Science, Big Data, and Data Mining
- Human Machine Interface (HMI)
  - Helping disabled people to have active/fruitful life
  - Mind Control
  - Interactive Voice Response (IVR) Systems
- Data Security (Cryptography, Steganography, and Watermarking)
  - AI in Cryptanalysis
- Quantum Key Distribution (QKD)
  - I've developed a Classical Key Distribution system equivalent to QKD systems (M.Sc.)
- Computer Graphics and Animation: Modeling 3D Objects, Fractal Geometry
- Decision Support Data Analysis, Simulation, and Visualization
- Multi Agent Systems
- Handdrawn Line Smoothing/Antialiasing Algorithms
- Digital Signal Processing (DSP), Image Processing, and Machine Vision
  - OCR, ICR, IMR, Breaking CAPTCHA
  - Automatic License Plate Recognition (LPR/ANPR) Systems
- Line/Rectangle/Circle/Ellipse Detection Algorithms
- Biometrics (Fingerprint/Iris) based Authorization/Access Control
  - Improving Iris Detection and Segmentation Algorithms
- Linear/Mixed Integer Programming
  - Developing Models
  - Using third party tools/solvers like AMPL, lpsolve, CPLEX
  - Developing custom solvers
- Resource Allocation and Planning
- Green Vehicle Routing Problem (G-VRP)
- Integer Factorization Algorithms
- Efficient Algorithms for Solving Edge Matching Puzzle (Eternity II)
- String Searching/Matching/Parsing Algorithms
  - Developing Internet Spiders/Crawlers
  - Integrating Different Versions of Attribute/Spatial Data (Master Data Management)
- File-based Application Security
- Software/Data Copy Protection
- Natural Language Analysis/Synthesis
  - Arabic Language Processing Tools, Techniques, and Applications
- Time Series Analysis
- Semantic Web
- Mobile Applications and Embedded Systems
- GPU Computing

Research:

I worked on many research problems most of them are business driven. I developed many real life systems in many countries across the world. During the past few years and while developing these systems, I gained a great deal of experience in using a number of powerful tools:
- Computational Geometry
  - Spatial Data Indexing (Raster/Vector)
  - Clustering, Covering, Cutting, and Tiling Algorithms
- Machine Learning:
  - Artificial Neural Networks
  - Graphical Models (Bayesian Networks)
  - Evolutionary Algorithms (GA/MA)
- Randomized Algorithms
- Approximate Algorithms

During my Ph.D. research, I worked extensively on:
- Graph Algorithms
- High Precision Floating Point Arithmetic
- Rigorous Computations
  - Interval Arithmetic
  - Affine Arithmetic

Currently, I'm working on the following problems:
- Optimal Polygon Triangulation (Computational Geometry/Combinatorics)
  - In this research, we target:
    - improving the performance of enumerating all the possible triangulations of a given convex polygon,
    - uniquely identifying every possible triangulation,
    - generating the triangulation on demand, and
    - finding an optimal triangulation given a set of constraints.
- Atrocities Prediction Using Spatial Data Mining (Data Mining/Big Data)
  - In this research, we target developing predictive models to help:
    - identifying countries vulnerable to the occurrence of atrocities and
    - estimating the rate of escalation/intensity of atrocities that are already occurring.
  - The research is based on the following two data sets:
    - PITF
    - GDELT
- Biologically Inspired Chaotic Evolutionary Optimization (Machine Learning)
  - In this research, we target
    - improving biologically inspired evolutionary algorithms using chaotic maps and
    - applying the resulting algorithms to feature selection problem.

Recent Publications:

[1] **I. A. ElShaarawy**, E. H. Houssein, F. H. Ismail, and A. E. Hassanien, "An exploration-enhanced elephant herding optimization," *Engineering Computations*, vol. 36, no. 9, pp. 3029–3046, Jan. 2019.

[2] A. A. K. Ismaeel, **I. A. Elshaarawy**, E. H. Houssein, F. H. Ismail, and A. E. Hassanien, "Enhanced Elephant Herding Optimization for Global Optimization," *IEEE Access*, vol. 7, pp. 34738–34752, 2019.

[3] Sead H. Mašović, **Islam A. Elshaarawy**, Predrag S. Stanimirović, and Predrag V. Krtolica, "Orbiting Triangle Method for Convex Polygon Triangulation," *Applicable Analysis and Discrete Mathematics*, vol. 12, no. 2, 2018.

[4] **I. ElShaarawy** and W. Gomaa, "Ideal Quantification of Chaos at Finite Resolution," in *Computational Science and Its Applications – ICCSA 2014*, Springer International Publishing, 2014, pp. 162–175.

[5] **I. ElShaarawy** and W. Gomaa, "An Efficient Computational Framework for Studying Dynamical Systems," in *2013 15th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)*, 2013, pp. 138–145.

Teaching:

- **Teaching Philosophy**
  I'm eager for not only educating my students but also inspiring, challenging, and motivating them. Before starting any course, I make sure that all the students are ready for that course and I do not hesitate to provide any required background. I'm also keen to set the appropriate instructional conditions under which (virtually) all the students can "master" most of what they are taught without the need to alter policies/schedules.

  I rely extensively on Discovery Learning as, in most of the courses that I teach to computer science/engineering students, there are new algorithms/protocols to teach. Instead of directly transferring the necessary knowledge to the "empty vessels", I emulate a problem solving situation in which the students are given an objective along with a set of constraints and are required to "discover" an algorithm/protocol that achieves the objective while satisfying the constraints. I stimulate all the students to participate in this active process and I declare that I do not care about the quality of the discovered algorithm/protocol (the end product). While the students are exploring the search space, I coach them by providing continuous feedback and encouraging them to collaborate by building on top of each others' promising partial solutions. In order to make sure that no student is left behind, I start with a relaxed (simple) version of the problem with (a few or no constraints) and move gradually towards the original problem (by adding one constraint at a time). This way, the discovery process is not a cognitive overload and does not necessarily require genius students. Although this process is time-consuming, it is very effective and boosts knowledge retention. I rely also on Experiential Learning as I'm always keen to prepare my students to be the graduates for which employers are looking by demonstrating the different concepts using real-life examples and providing real-world experience through internships, simulators, and/or practical projects.

  As a computer engineer, I feel very comfortable with technology and I consider myself a "digital native". I effectively employ a number of technologies/tools to enhance my students learning experience including: Moodle (quizzes, assignments, questionnaires, messaging, files, links, auto-attendance, etc.), Turnitin, Mentimeter, tablet devices, and subject/discipline specific technologies/tools (like simulators, interactive virtual labs, workbenches, integrated development environments, etc.). I'm aware also of the importance of using technology not for the sake of technology itself but for pedagogically underpinned reasons in order to improve the learning experience.

- **Teaching Experience**
  I taught undergraduate as well as postgraduate (M.Sc./Ph.D.) computer science and computer engineering students. I had the opportunity to deliver lectures to small groups (100, 50, or less) as well as large groups (300 x 4 = 1200 students) and I used to receive outstanding feedback from the students and the administration.
  I assisted in teaching the following courses (as a teaching assistant only):
  - Compilers
  - Expert Systems

- Machine Learning
- Neural Networks
- Image Processing
- Machine Vision
- Computer Architecture
- System Analysis and Design

I prepared, delivered, and led the following courses:
- Introduction to Computer Science (UG)
- Computer Programming with C++/Java/Python/C#/MATLAB (**PG**/UG)
- Concepts of Programming Languages (UG)
- Data Structures (UG)
- Algorithms (**PG**)
- Artificial Intelligence (**PG**/UG)
- Data Mining (UG)
- Big Data (UG)
- Computer Graphics (UG)
- Microprocessor (UG)
- Logic Circuits (UG)
- Embedded System (UG)
- Parallel Computing (**PG**)
- Distributed Systems (**PG**)
- Cloud Computing (UG)
- Cryptography and Network Security (**PG**)
- Geographical Information Systems (UG)

- **Teaching Interests**

  I prefer to teach Algorithms, Data Structures, Fundamentals of GIS, Concepts of Programming Languages, Intermediate as well as Advanced Computer Programming, Machine Learning, Image Processing, Remote Sensing, and Machine Vision.

Service:

My service within my home university includes teaching, subject leadership, curriculum development, academic advising, supervising M.Sc. as well as Ph.D. students, and software development. In addition, I served in the accreditation of my school from *National Authority for Quality Assurance and Accreditation of Education*. Moreover, I served in administrative positions. Currently, I'm the Chief Information Officer (CIO), Benha University. I also provide many community services for charity (free courses/free software).

Computer Skills:

OPERATING SYSTEMS	First Used	Experience	Last Used	Proficiency	Comments
MS DOS (5.0:6.22)	1992	10 Years	2002	****	User, Developer
MS Windows Server 2003	2002	01 Year	2003	**	User
MS Windows me	2002	02 Years	2004	***	User, Developer
MS Windows XP Pro/Home	2003	13 Years	2016	****	User, Developer
MS Windows CE/Mobile	2005	03 Years	2008	***	User, Developer (Pocket PC)
Palm OS	2005	03 Years	2008	**	User (Palm Vx/Palm Treo)
MS Windows Vista	2008	02 Years	2010	**	Developer
MS Windows 7/Server 2008	2010	09 Years	Currently	****	User, Developer
Linux Ubuntu/Mint	2010	09 Years	Currently	****	User, Developer
Android	2011	08 Years	Currently	***	User, Developer
MAC OS X (10.11)	2015	04 Years	Recently	**	User, Developer
iOS (9.3)	2015	02 Years	2017	**	User, Developer
MS Windows 10	2015	04 Years	Currently	**	User, Developer

IDE	First Used	Experience	Last Used	Proficiency	Comments
MS Visual Studio 97	2000	03 Years	2003	****	VB5
MS Visual Studio 6.0	2001	11 Years	2012	****	VB6, VC++6
Eclipse	2004		2004	**	Java
MS Embedded Visual C++ (4.0) SP3	2004	02 Years	2006	***	Pocket PC 2002
JCreator	2004	03 Years	2007	***	Java
MS Visual Studio 2003	2005	02 Years	2007	***	VB.NET
MS Visual Studio 2005	2005	08 Years	2013	***	C#, VB.NET, C++
MS Visual Studio 2008	2008	06 Years	2014	****	C#, VB.NET, C++
NetBeans (6.1:8.1)	2008	11 Years	Currently	****	J2ME, J2SE, JADE, Android SDK (r20)
MS Visual Studio (2010:2015)	2010	09 Years	Currently	****	C#, VB.NET
Rstudio (1.1)	2015	04 Years	Currently	**	
Xcode (7.0)	2015	02 Years	2017	**	
Android Studio (1.0:3.0)	2016	03 Years	Currently	**	
QT Creator (3.5)	2016	03 Years	Currently	**	QtPy
Arduino IDE (1.8.5)	2017	02 Years	Currently	**	

LANGUAGES/FRAMEWORKS	First Used	Experience	Last Used	Proficiency	Comments
Logo	1991	28 Years	Recently	****	
QuickBasic 4.5 (QBasic)	1992	22 Years	2014	****	Games, Graphics
Fortran (77, 95)	1997	09 Years	2006	***	
Turbo Pascal 7	1999	03 Years	2002	**	
VHDL	2000		2000	*	No practical work
Turbo C/Borland C++ 4.0	2000	19 Years	Currently	****	
Borland Delphi 2	2001	01 Year	2002	**	
Visual Basic (5.0, 6.0)	2001	11 Years	2012	****	
HTML/HTML5	2001	18 Years	Currently	****	
SQL, PL/SQL, PL/pgSQL	2001	18 Years	Currently	****	
Prolog	2002	03 Years	2005	**	
Java (J2SE 1.4)	2003	16 Years	Currently	****	

VBA	2003	16 Years	Currently	****	For (ArcGIS, Office)
VBScript/VBS	2003	09 Years	2012	****	ESRI Geoprocessing Script
JavaScript	2003	16 Years	Currently	****	Google Maps, Mapbox, Leaflet
Flash ActionScript	2003	04 Years	2007	***	
MATLAB Scripting Language	2003	16 Years	Currently	****	
Embedded Visual C++ 4.0 SP3	2004	02 Years	2006	**	Pocket PC 2002
3D Studio Max 4 script	2004	01 Year	2005	**	
AMPL (9.10)	2004	06 Years	2010	**	VB6, VB.NET
Visual C++ 6	2005	01 Year	2006	**	
Visual Basic.NET	2005	14 Years	Recently	****	
C#.NET	2006	13 Years	Currently	****	
Windows PowerShell	2007	03 Years	2010	**	
Java (J2ME)	2008	02 Years	2010	**	NetBeans (6.1)
ASP.NET (2.0:4.0)	2008	11 Years	Recently	****	VB.NET, C#/VS2008, VS2010
Linux Shell Scripting	2010	09 Years	Currently	****	
Python (2.5:2.7)	2010	09 Years	Currently	****	ESRI Geoprocessing Script, OSGeo
LaTeX	2011	08 Years	Currently	***	
PHP (5.x)	2012	07 Years	Recently	***	LAMP
R (3.2)	2015	04 Years	Currently	***	Big Data/Data Mining
Swift (2.0)	2015	02 Years	2017	**	
Google Apps Script	2015	04 Years	Currently	**	
Arduino C++ (1.8.5)	2017	02 Years	Currently	**	
TECHNOLOGIES/TOOLS	**First Used**	**Experience**	**Last Used**	**Proficiency**	**Comments**
DAO (3.5, 3.6)	2001	05 Years	2006	***	Using VB6
Regular Expressions	2001	18 Years	Currently	****	.NET, ECMA, MATLAB, …
Embedded Systems	2003	03 Years	2006	**	Pocket PC, MCU
MS Smartphone/Pocket PC 2002 SDK	2004	02 Years	2006	**	eVC++4SP3
OpenGL 2.1	2003	04 Years	2007	***	Using C++, VB6
ODBC	2003	04 Years	2007	**	(Oracle, SQL, MySQL)/VB6
ActiveX DLL/OCX	2004	03 Years	2007	***	VB6
Adobe Acrobat Plug-Ins	2005		2005	**	For Acrobat 6
MS Office Add-Ins	2005	01 Year	2006	**	For Office XP
Client Server	2005	03 Years	2008	***	VB6
Speech API (SAPI)	2005	03 Years	2008	**	VB6
Windows Sockets (Winsock 2)	2005	03 Years	2008	***	
ADO (2.0)	2005	07 Years	2012	**	VB6
API Hooking/Intercepting	2005	03 Years	2008	**	Windows XP, Windows CE
Telephony API (TAPI)	2007	04 Years	2011	**	Windows XP
lpsolve (5.5)	2007	03 Years	2010	**	VB6, VB.NET
WM (5.0, 6.0) Smartphone/Pocket PC SDK	2008	02 Years	2010	**	VB.NET/VS2005
MIDP (1.0, 2.0, 2.1)	2008	02 Years	2010	**	J2ME/NetBeans (6.1)
Shell Extension	2008	03 Years	2011	**	VB6, VB.NET, C#
Multithreading	2008	11 Years	Currently	****	VB.NET/VS2005
WPF	2008	02 Years	2010	**	VB.NET/VS2008
OpenCV (1.1pre1a, 2.0.0a)/Emgu CV(1.4:2.1)	2008	11 Years	Currently	****	VC++/VS2005, VB.NET/VS2008

	First Used	Experience	Last Used	Proficiency	Comments
JADE (3.6)	2008	03 Years	2011	***	J2SE/NetBeans (6.5)
AutoCAD COM Interface	2009	02 Years	2011	***	VB.NET 2008/AutoCAD 2007
Oracle Business Intelligence (10g)	2010	02 Years	2012	**	
OpenMP	2011	01 Year	2012	**	
GPU Computing	2011	08 Years	Currently	***	CUDA Toolkit (6.0), MATLAB PC
IBM ILOG CPLEX Optimization Studio (12.4)	2013	03 Years	2016	**	MATLAB R2013a
Weka (3.6:3.8)	2015	04 Years	Currently	***	
Elasticsearch (2.3.3)	2016	03 Years	Currently	***	
Telegram API (45)	2016	02 Years	2018	***	
WebGL (1.0)	2016	03 Years	Currently	***	
OpenCV for Tegra (2.4.13.2)	2017	02 Years	Recently	**	
Firebase	2018	01 Year	Currently	***	Auth, Cloud Messaging, and Database
DATABASE	**First Used**	**Experience**	**Last Used**	**Proficiency**	**Comments**
MS Access (97, 2002, 2003, 2010)	2001	18 Years	Currently	****	Reports, Forms, VBA
MySQL (5.0, 5.1)	2005	14 Years	Currently	****	GUI Tools, SQLyog
Oracle Database (9i, 10g)	2007	05 Years	2012	**	SProc, User Defined AggFunc
Microsoft SQL Server (2000, 2005 Express, 2008)	2008	11 Years	Currently	****	
InterBase	2010	01 Year	2011	**	Firebird, DotNetFirebird, FlameRobin
Sybase	2010	01 Year	2011	**	Sybase Adaptive Server Anywhere 9
SQLite (3.6)	2011	08 Years	Currently	***	VS2008 (NETCF 3.5), VS2010
PostgreSQL (9.3)	2015	04 Years	Currently	***	VS2010 (Npgsql.2.2.6)
Greenplum Database (5.0)	2016	03 Years	Recently	**	
REPORTS	**First Used**	**Experience**	**Last Used**	**Proficiency**	**Comments**
MS Access Reports	2001	07 Years	2008	****	
Crystal Reports (8.5, 10, VS2005)	2005	05 Years	2010	****	VB6, VB.NET
Microsoft Reports (Visual Studio)	2007	08 Years	2015	****	VS2005, VS2010
JasperReports (3.5)	2009	01 Year	2010	**	J2SE/NetBeans (6.5), iReport (3.5)
Oracle BI Publisher (10g)	2010	02 Years	2012	**	
Stimulsoft Reports (2012)	2012	02 Years	2014	**	VB.NET, ASP.NET/VS2010
GIS	**First Used**	**Experience**	**Last Used**	**Proficiency**	**Comments**
Google Maps API (2:3)	2007	12 Years	Currently	****	JavaScript, VB6, ASP.NET 2.0/C#
ESRI MapObjects/ArcObjects (2.0)	2007	12 Years	Recently	****	VB6, VB.NET, VBA
ArcGIS Server (9.3, 10) for MS .NET Framework	2008	11 Years	Recently	****	VB.NET, C#/VS2005, VS2008
ArcGIS Server JavaScript API	2010	09 Years	Recently	****	Google Maps (1.6)
ThinkGeo Map Suite (3.0:6.0) - Web Edition	2010	09 Years	Recently	****	C#/VS2008
Oracle Spatial (10g) + Oracle Mapviewer (10.1.3.3)	2010	02 Years	2012	**	
SharpMap (1.0, 2.0)	2010	09 Years	Currently	****	VB.NET, C#/VS2010
NetTopologySuite (1.13)	2010	09 Years	Currently	****	VB.NET, C#/VS2010
OSGeo GDAL/OGR (1.10)	2013	06 Years	Currently	***	VB.NET/VS2010 (Command Line)
QGIS (2.0)	2013	06 Years	Currently	***	
BruTile (0.9)	2014	05 Years	Currently	***	VB.NET, C#/VS2010
DotSpatial (1.6)	2014	05 Years	Currently	***	VB.NET, C#/VS2010
GeoServer (2.5)	2014	05 Years	Currently	**	Automation using cURL
Orfeo ToolBox (5.x)	2015	04 Years	Currently	***	QGIS Plugin
GRASS GIS (7.0.x)	2015	04 Years	Currently	***	QGIS Plugin

	First Used	Experience	Last Used	Proficiency	Comments
PostGIS (2.1)	2015	04 Years	Currently	***	OSM
pgRouting (2.1)	2015	04 Years	Currently	***	OSM
OSM API	2015	04 Years	Currently	**	Overpass API, OSRM Server API
Mapbox (2.2.2)	2015	04 Years	Currently	***	Mapbox Studio, Web, Android, iOS
Skobbler Maps (2.5.x)	2015	02 Years	2017	***	iOS
SpatiaLite (4.3)	2015	04 Years	Currently	***	Python
Leaflet (0.7.7)	2015	04 Years	Currently	***	
MISC	**First Used**	**Experience**	**Last Used**	**Proficiency**	**Comments**
AutoDesk AutoCAD (14.0:20.0)	1998	17 Years	2015	****	User, Developer
Microsoft Office (97:2016)	2001	18 Years	Currently	****	User, Developer
AWESIM/Visual SLAM II	2002	03 Years	2005	**	Simulation
Macromedia Flash (5.0, MX, MX 2004)	2003	04 Years	2007	***	Mainly 0.5
MATLAB (5.0:9.2)	2003	16 Years	Currently	****	NN, IP, PC (GPU) Toolboxes
Adobe Photoshop (6.0 me, 7)	2004	03 Years	2007	**	Developer
OpenOffice/LibreOffice (3.x:6.x)	2010	09 Years	Currently	****	User, Developer
NetLogo (4.0)	2011	08 Years	Recently	***	Simulation
Oracle VM VirtualBox (4.x:5.x)	2012	07 Years	Currently	***	GUI/Command Line
Maple (16)	2013	03 Years	2016	***	Symbolic Computation
TexMaker (3.x:4.x)	2013	06 Years	Currently	***	TeX Live/Ubuntu

*= basic understanding, **= average skill, ***= good skills, ****= extensive work experience

References:

- Will be furnished upon request