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Education:

- **B.Sc.** in Computer Science from Faculty of Computers and Information Menofia University, EGYPT, with **very good with honor degree** and **First Rank, 2009**.
- **M.Sc.** in Computer Science Faculty of Computers and Information Menofia University, EGYPT **March 2013**. **Thesis title:** “*3D shape reconstruction Using Structure from Motion Method*”.
- **Double PhD** in Computer Science from Strasbourg University, FRANCE and Zaragoza University, SPAIN, with **very good degree, June 2018**. **Thesis title:** “*Visual Monocular SLAM for Minimally Invasive Surgery and its Application to Augmented Reality*”.

Computer and programming skills

Programming Languages

- Java J2SE (Standard Edition), JDBC, RMI, Socket programming,
- Java J2EE (Enterprise Edition), Java applet, JSP, Servlet, JSF, Ajax4JSF, Rich faces, Hibernate,
- Java J2ME (Micro Edition) UI, Bluetooth API (JSR- 82),
- C++ (Object Oriented, Multithreading, File processing),
- Little experience with C#.NET and CORBA,
- Python, SQL, PL SQL, CVS,
- PHP,
- OpenCV,
- Cmake,
- Visualization Toolkit (VTK),
- VXL: is a collection of C++ libraries designed for computer vision research and implementation,
- OpenCL (Open Computing Language),
- Android.

Softwares

- Database: MS Access, My SQL, and Oracle10g.
- Web Technology: HTML, XML, XHTML, CSS, JavaScript and Dream weaver.
- **IDEs:** NetBeans, Eclipse, JBuilder 9, JCreator, DEV C++, C-Free, Qt Creator and Visual Studio.
- Platforms: Microsoft Windows XP, Windows 7, Linux Red Hat 8 and Linux Ubuntu.
- Jasper Report and ireport.
- Matlab.
- Jommla.

Technical certifications, previous and current work:

- Certified by Telecommunication Ministry for graduation project. It Has been choosen as one of the best 15 projects at ITAC-ITIDA in 2008-2009.
- Certificate of Honor from Menofia University for the **First Rank** achievement in **B.Sc** degree.
- Certificate of Honor from Menofia University for my **M.Sc.** thesis.
- Certificate of Honor from Menofia University for my **PhD** thesis.
- Certified by **ORACLE** for the achievements in ThinkQuest Competition as team Coach of 5 faculty students.
- Accepted and Certified by **Medical Imaging Summer School (MISS 2016)**, Favignana, Sicily ITALY.
- **Previous work:**
 - ICDL Trainer at faculty of Computers and Information, Menofia University, Egypt (2009-2010)
 - Software developer at **Hewlett-Packard** Company (2010).
 - Teaching assistant at Computer Science dept. Faculty of Computers and Information, Menofia University, Egypt (2010 & 2013-2015).
 - Researcher at **IRCAD** France 2011-2012 and 2015-2018(*Research Institute Against Digestive Cancer*).
Website: <https://www.ircad.fr/research/computer/>
 - Researcher at SLAM-Lab 2016-2018 **Universidad de Zaragoza, Zaragoza, SPAIN**
- **Current work:** Lecturer at Computer Science dept. Faculty of Computers and Information, Menofia University, Egypt.

Teaching activities:

- Computer Language-1 Course (Java J2SE basics, OOP, Multithreading, JDBC, RMI and Socket Programming),
- Computer Language-2 Course (Java J2EE, Java Applet, Servlet, JSP, JSF and Hibernate),
- Practical Database Course (Oracle 10g, SQL, PL\SQL, Oracle Forms and Oracle Report),
- Database Concepts Course (Normalization, ERD, Relational algebra, Transaction Management, Concurrency control),
- Advanced Database Course (Indexing and Hashing, DB Security, Recovery...etc)
- File Structure Course (Using C++ Language),
- Algorithms and Flowcharts Course,
- Data Structure Course (Using Java J2SE),
- Mobile Development Course (Using Android).
- Distributed Database Course.
- Programming language Course at **Faculty of Engineering, Menofia University**.
- Structured Programming Course at **Higher Technological Institute in the 10th of Ramadan City**.

List of publications:

- **Nader Mahmoud**, Stephane A. Nicolau, Arabi Keshk, Mostafa A. Ahmad, Luc Soler, and Jacques Marescaux, "Fast Textured Surface Reconstruction of Organs using Monocular Endoscope during Exploratory Phase". *International conference in Computer Assisted Radiology and Surgery (CARS 2012) Pisa, Italy*, vol. 7, suppl. 1, pp. 405-407, 2012 .

- **Nader Mahmoud**, Stephane A. Nicolau, Arabi Keshk, Mostafa A. Ahmad, Luc Soler, and Jacques Marescaux, “Fast 3D Structure From Motion with Missing Points from Registration of Partial Reconstructions”. *International conference on Articulated Motion and Deformable Objects (AMDO 2012)*, vol. 7378, pp. 173-183 Springer Berlin Heidelberg, 11-13 july, Spain 2012.
- **Nader Mahmoud**, Ashraf B. Elsis, “OpenCL implementation of basic operations for 3D structure from motion estimation”. *International Conference on Informatics and Systems (INFOS)*, Cairo, pp. 27-34, 2014.
- **Nader Mahmoud**, Óscar G. Grasa, Stéphane A. Nicolau, Christophe Doignon, Luc Soler, Jacques Marescaux, and J.M.M. Montiel. “On-patient see-through augmented reality based on visual slam”. *International Journal of Computer Assisted Radiology and Surgery*, vol. 12(1),pp.1–11, 2017. **Best Paper Award**.
Video of publication: <https://www.youtube.com/watch?v=KNd0aXDphXM>
- **Nader Mahmoud**, Iñigo Cirauqui, Alexandre Hostettler, Christophe Doignon, Luc Soler, Jacques Marescaux, and J.M.M. Montiel . “Orb slam-based endoscope tracking and 3d reconstruction”. In *Computer-Assisted and Robotic Endoscopy (MICCAI-CARE)*, pp. 72–83, Cham,2017. Springer International Publishing.
Video of publication: <https://www.youtube.com/watch?v=UzPjHQX5-9A>
- **Nader Mahmoud**, Alexandre Hostettler, Toby Collins, Luc Soler, Christophe Doignon, and J.M.M. Montiel. “Slam based quasi dense reconstruction for minimally invasive surgery scenes”. In *ICRA-C4 Surgical Robots: Compliant, Continuum, Cognitive, and Collaborative*, 2017. arXiv:1705.09107. **Finalist of Best Paper Award**.
Video of publication: <https://www.youtube.com/watch?v=oG54CBzqVh0&t=12s>
- **Nader Mahmoud**, Toby Collins, Alexandre Hostettler, Luc Soler, Christophe Doignon, and J.M.M. Montiel. “Quasi-dense reconstruction from monocular laparoscopic video”. In *Surgetica conference*, Strasbourg, France 2017.
Video of publication: <https://www.youtube.com/watch?v=R17lsiIRjbM>
- **Nader Mahmoud**, Toby Collins, Alexandre Hostettler, Luc Soler, Christophe Doignon, and J.M.M. Montiel. “Live Tracking and Dense Reconstruction for Hand-held Monocular Endoscopy”. *IEEE Transaction on Medical Imaging* 2018.
Video of publication: <https://www.youtube.com/watch?v=JPhBZ3G6l2w&t=4s>

Activities as reviewer:

Participated in the papers review process for the following conferences and journals:

- International Journal of Computer Vision (IJCV).
- International Journal of Computer Assisted Radiology and Surgery (IJCARS).
- International Conference on Intelligent Robots and Systems (IROS)
- Computer Assisted and Robotic Endoscopy (CARE Workshop), MICCAI.
- International Conference on Information Processing in Computer-Assisted Interventions (IPCAI).

List of seminars:

Main speaker in the following seminars and poster sessions:

- Presenting the research paper entitled “On-patient see-through augmented reality based on visual slam” in CARS conference, Heidelberg, **GERMANY**, 2016.
- Presenting the research paper entitled “Orb slam-based endoscope tracking and 3d reconstruction” in CARE Workshop, Athens, **GREECE**, 2017.
- Presenting “Quasi-dense reconstruction from monocular laparoscopic video”, in Surgetica, Conference, Strasbourg, **FRANCE**, 2018.
- Presenting “Visual SLAM for Monocular Endoscope”, Poster in Medical Imaging Summer School (MISS 2016), Sicily, **ITALY**, 2016.
- Presenting the research paper in entitled “OpenCL implementation of basic operations for 3D structure from motion estimation”, INFOS Conference, Cairo, **EGYPT**, 2014.
- Presenting my research activity entitled “Visual Monocular SLAM for Minimally Invasive Surgery and its Application to Augmented Reality” in Zaragoza University, Zaragoza, **SPAIN**, 2018.
- Presenting my PhD research in “**My thesis in 180 seconds**” competition, Strasbourg University, **FRANCE**, 2018.

Brief summary of M.Sc. thesis:

The M.Sc. research project was about 3D surgical scene reconstruction from a moving monocular laparoscope. The proposed approach recover accurately the 3D structure of the surgical scene (internal organs, diaphragm wall... etc), in addition to the 3D poses of the laparoscope camera in the recorded video sequence based on Structure from Motion (SfM) technique. The proposed approach provide a reliable and accurate estimation of the 3D reconstruction and camera poses in case of orthographic, scaled orthographic and para-perspective camera models.

Brief summary of PhD thesis:

The PhD thesis provides a systematic approach for estimating the required pieces of information that enable markerless augmented reality overlay of pre-operative surgical models, based on a pure vision Simultaneous Localization And Mapping (SLAM). The preliminary work in this thesis has presented a sparse SLAM solution for real-time and accurate intra-operative visualization of patient’s pre-operative models over the patient skin. We proposed a non-invasive registration and visualization pipeline that requires minimal interactions from medical staff and runs solely on a commodity Tablet-PC with a build-in camera. Subsequently, we directed our focus to laparoscope surgery, which is very challenging for monocular 3D reconstruction and laparoscope camera tracking. A novel dense multi-view stereo-like approach is proposed that perform real-time dense reconstructions and hence eliminates the wait for the abdominal cavity exploration. The proposed system has been validated and evaluated on real porcine sequences of abdominal cavity exploration and showed a superior performance to other dense SLAM methods in terms of accuracy, density, and computation times. It has been also tested on different in-door sequences and showed a promising reconstructions results.

Languages:

- Arabic: Mother tongue.
- English: Excellent (Writing-Speaking).