Resume

Personal

Name Shymaa M. Arafat

Birth Date 25-7-1972

Birth Place *Malaysia*

Email Shymaa.arafat@gmail.com, shar.academic@gmail.com

Phone

GitHub https://github.com/DrShymaa2022/,

https://github.com/Shymaa-Arafat/

Medium https://medium.com/@shymaa.arafat/

ORCID iD: 0009-0009-7571-4060

Facebook https://m.facebook.com/100010333725264/

YouTube. https://youtube.com/@shymaaarafat1342

Researchgate https://www.researchgate.net/profile/Shymaa-Arafat

Wallet address 0xe8a9e41b726ba3eae6837dcf74e00e2d224d5842

Address lives in Egypt, but willing to work abroad in academic or research positions

Previous Positions

- Visting Associate Professor at Beirut Arab University, Lebanon (2/2012-4/2012), Faculty of Engineering, Computer Science & Engineering Dept.
- Part time Associate Professor in Computer Engineering Dept., Pharos University,
 Alexandria, Egypt (Spring 2011, Fall 2009)
- Full time Associate Professor at the Computer Science Dept., Faculty of Computer & Information Sciences, Ain Shams University, Cairo, Egypt. (started 1/10/1999 as an assistant lecturer, and resigned 7/7/2008)
- Participated as part-time lecturer/ professor in many universities & Institutes in the same Interval (99-2008) as listed in the teaching experience
- Research Assistant at Mubarak City for Scientific Research & Technological Applications, Informatics Institute (4/1995- 30/9/1999)

(worked mostly in a virtual reality application where we took a training of the *Worldup* Software, and worked on developing a walk thru application)

Education Record (Academic Grades)

Ph.D. in Computer Science (July 2001)

Alexandria University, Faculty of Engineering, Computer Science & System Engineering Dept.

 $\frac{http://193.227.0.100/eulc_v5/Libraries/Thesis/BrowseThesisPages.aspx?fn=ThesisPicBody\&BibID=10011669$

(copy of the thesis is available at https://github.com/DrShymaa2022/PhD papers)

Title of Thesis Operating on Optimal Binary Code Trees **Supervisors**

Prof. Dr. Ahmed A. Belal Prof. Dr. Mohamed S. Selim

Ph.D. Courses

Course Name	Teaching Professor	Grade
Parallel & Distributed Systems	Dr. Hussain Ali	V. Good
Security in Computer Networks	Dr. Ahmed Belal	Distinction
Probabilistic Algorithms	Dr. Ahmed Belal	Distinction

M.Sc. in Computer Science (July 1997)

University of Alexandria, Faculty of Engineering, Computer science & System Engineering Dept.

 $http://193.227.0.100/eulc_v5/Libraries/Thesis/BrowseThesisPages.aspx?fn=PublicDrawThesis\&BibID=10153838$

Title of Thesis An Efficient Parallel Sample Sorting Algorithm Supervisors

Prof. Dr. Ahmed A. Belal Prof. Dr. Nagwa M. el-Makky

Master Courses

Course Name	Teaching Professor	Grade
Networking Personal Computers	Dr. Walid Aref Distinction	
Advanced Studies on Data Bases	Dr. Nagwa el Makky	V. Good
Algorithms Design & Analysis	Dr. Ahmed Belal	Pass *
Modern Control Theory	Dr. Ibrahim Abd el	Distinction
-	Salam	
Hard Ware	Dr. Salah Selim &	V. Good
	Dr. Layla Abu Hadid	
Natural Language Processing	Dr. Ahmed el Nahas	Pass

^{*} The course is offered on a pass/Fail basis

B.Sc. in Computer science & Automatic Control (June 1994)

University of Alexandria, Faculty of Engineering, Computer science & Automatic Control Dept.

Graduation Grade Very Good (84.39%) with degree of honor **Graduation Project** Simulation of Storage Subsystems

Project Grade Distinction

Online MOOCs

Mastering Web3 MOOC online course (winter 2025)

offered by University of Nicosia

Final grade: 100 (50/50 MCQ, download to view in detail

https://github.com/DrShymaa2022/recommendation_letters_CVdocuments/blob/main/Mastering_Web3_Final%20MOOC%20Quiz_%20Attempt%20review%20_%20unic.mhtml)

Certificate

https://github.com/DrShymaa2022/recommendation_letters_CVdocuments/blob/main/Mastering_Web3_Certificate.pdf

Verifiable on the Bitcoin blockchain (https://www.unic.ac.cy/verify/)

ZKP MOOC online course (Winter 2023)

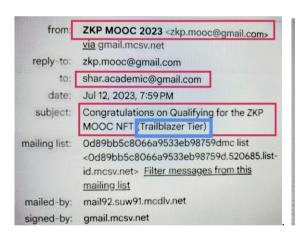
Zero Knowledge course offered by Berkeley University

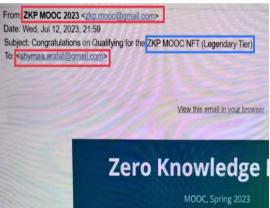
https://zkp-learning.org

Earned <u>Legendary Tier</u> (according to answering lecture quizzes on time+ delivering training lab + take home exam) & <u>Trailblazer Tier</u> (according to articles available on GitHub and medium) NFTs.

https://basescan.org/tx/0xb6e86833b0f796c9a641dcc50ad0a400ce0ad7c5210abfe6dc19fbb5559d92bd

 $\frac{http://basescan.org/tx/0x1f45129107b46fdea040761b6055e7a7f55326b0b40a72d0dbee}{536910523fdb}$

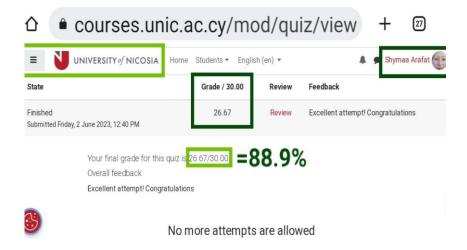




Introduction to DeFi MOOC (Spring 2023)

A compact 6 week online course offered by University of Nicosia Final grade **88.9**, (26.67/30, No free NFT)

https://github.com/DrShymaa2022/recommendation_letters_CVdocuments/blob/main/DeF23_FinalQuiz_%20Attempt%20review%20_%20unic.mhtml (download to view)



Introduction to Digital Currencies MOOC (Spring 2023)

Offered by University of Nicosia

Final grade **85.67**, NFT issued on 23/5/2023.

https://app.block.co/certificate/f640aada-8353-43bb-9126-f6a64b829b90/

<u>DeFi MOOC online course</u> (Fall 2021)

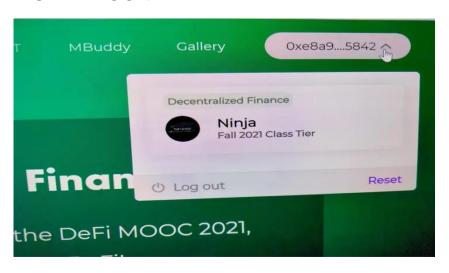
Decentralized Finance online MOOC course offered by Berkeley University https://defi-learning.org/f21

Earned the NFT Ninja-Tier

 $\underline{https://explorer.oasis.io/mainnet/emerald/token/oasis1qrels9582m4wf25guu5057wtg74jncvqay8u6947/instance/41}$

(The older site https://gallery.metamirror.space/detail/?item=defimooc2021nft-41 has changed due to changes in the oasis blockchain holding those NFTs that were somewhat earlier pioneers for such an idea of using NFTs as course certificates; passing was according to MCQ exam+an https://metamirror.space/detail/?item=defimooc2021nft-41 has changed due to changes in the oasis blockchain holding those NFTs that were somewhat earlier pioneers for such an idea of using NFTs as course certificates; passing was according to MCQ exam+an MCQ exam+an metamirror.space/detail/?item=defimooc2021nft-41 has changed as a course certificates; passing was according to MCQ exam+an metamirror.space/detail/?item=defimooc2021nft-41 has changed as a course certificates; passing was according to metamirror.space/detail/?item=defimooc2021nft-41 has changed as a course certificates; passing was according to metamirror.space/detail/?item=defimooc2021nft-41 has changed as a course certificates; passing was according to metamirror.space/detail/?item=defimooc2021nft-41 has a course certificates; passing was according to metamirror.space/detail/?item=defimooc2021nft-41 has a course certificates; pas

-For honesty, I passed without getting the smart contract right then I've got it correct afterwards even with different versions (trying the 2 steps liquidation for > 50% that was not required by the lab, only presented in the lectures as a new contribution from the professor's paper).



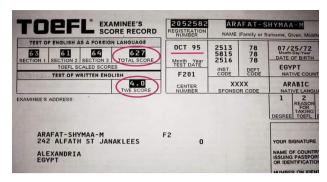
AMID-EAST Exams

TOEFEL <u>627</u> in 10/1995

TWE 4 in 10/1995

TSE <u>40</u> in 10/1996





GRE General

verbal 380, analytical 670, quantitative 780 in 10/1995

GRE Subjective in Computer Science 84 in 11/1998



Activities

Winner of a research grant offered by the Center of Special Studies and Programs (CSSP), Bibliotheca Alexandrina (March 2005,involved 2 weeks visit to SMU11/9/2005-25/9/2005) https://www.bibalex.org/cssp/Researchs/2004.htm

https://www.bibalex.org/cssp/Event/Event.aspx?ID=55

Research Title: Providing Secure Communications for Wireless and Wireline Applications Foreigner Counterpart: Prof. Dr. Hesham el Rewini,

Chairman of Computer Science & Engineering Dept., Faculty of Engineering, Southern Methodist University (SMU), USA (now in Marymount University as stated in the recommendation letter)

Teaching Experience

Course Name	Academic year	University	Date
Algorithms Design &	Post-graduate Computer	Faculty of	3/2004-/2004
Analysis	sciences	Science,	3/2003-/2003
Compilers Theory	4 th year Computer science	Alexandria	9/2003-1/2004
Computer Systems &	3 rd year Computer science	University	9/2002-1/2003
Architectures	1	-	
Artificial Intelligence	3 rd year	Faculty of	2/2004□
	,	Computer &	6/2004
Operating Systems	3 rd year	Information	2/2008
		Sciences	
Compiler Theory	4 th year Computer science		9/2002-1/2008
· ·	-	Ain shams	
Computer Security	4 th year Computer science	University	2/2002-6/2002
			2/2003-6/2003
Digital Design	2 nd year		9/2001-1/2002
Advanced Compilers	Post-graduate Computer		10/2003-2/2004
Design	Science		10/2002-2/2003
Introduction to wireless	4 th year Computer science		1/2005 -5/2005
networks			
Parallel & distributed	4 th year Computer science		1/2005 -5/2005
systems			
Structured	1 st year		1/2006- 5/2008
Programming			
Distributed Operating	Post-graduate		10/2005-2/2006
Systems	computer science		
Report Writing			2/2006-6/2006
Preparing Research			
Material			
Computing Algorithms	10 th &7 th term Computer	Arab	2/2003-6/2003
1 0 0	Engineering	Academy for	
Advanced Programming	3 rd term Computer science	Science &	
Digital Design	3 rd term-Computer Science	Technology	
	& Computer Engineering		
Programming	Summer course		7/2003
Applications			
Computer Systems	4th year Electrical	Alexandria	
	Engineering	Institute of	9/2003-1/2004
Algorithms Design &	2 nd year Computer	Technology	
Analysis	Engineering		
Information Technology	3 rd year Computer		
	Engineering		2/2004-6/2004
Formal Languages	3 rd year Computer		
	Engineering		
Operating Systems	3rd year Computer	Pharos	9/2009-2/2010
	Engineering	University	
Computer & Networks	4 th year Computer	Pharos	3/2011-7/2011
Security	Engineering	University	
Data Structures	2 nd year Computer	Beirut Arab	2/2012-4/2012
	Engineering	University	i .

Publications

- 1- S. Arafat, A. Belal, N. el-Mekky, "A new parallel sample sorting algorithm", *In Proceedings of the IASTED conference on Computer Systems & Applications*, 30 March- 2 April 1998, Irbid, Jordan.
- 2- A.Belal, M. Abd el Azim, S. Arafat, "Limiting the search for two dimensional optimal alphabetic trees", *In Proceedings of The Fourth Joint Conference for Information Sciences JCIS98*, 23-28 October 1998, North Carolina, USA; http://dimacs.rutgers.edu/archive/TechnicalReports/abstracts/1998/98-43.html, full paper:
 - https://github.com/DrShymaa2022/PhD_papers/blob/main/LimitingSearchFor2Dopt imalAlphabeticTrees 98.pdf
- 3- A. Belal, M. Selim, S. Arafat, "Rebuilding Huffman Trees in Linear Time", *In Proceedings of The Seventh Maghrebian Conference on Computer Sciences MCSSEAI'2002*, 6-8 May 2002, Annaba, Algeria.
- 4- A. Belal, M. Selim, S. Arafat, "Merging Optimal Alphabetic Trees in Linear Time", In Proceedings of The First International Conference on Intelligent Computing & Information Systems ICICIS 2002, 24-16 June 2002, Cairo, Egypt.
- 5- A. Belal, M. Selim, S. Arafat, "Building Optimal Alphabetic Trees Recursively", *The 3rd WSEAS International Multiconference on Mathematics & Math 2002*, 1-5 September 2002, Wolin Island, Poland, Vol 1, Issue2 of WSEAS Transaction on Mathematics, 2002, pp.77-82.
- 6- A. Belal, M. Selim, S. Arafat, "*Towards an Optimal Dynamic Alphabetic Tree*", International journal on Intelligent Computing & Information Systems IJICIS; http://archive.dimacs.rutgers.edu/TechnicalReports/abstracts/1999.sav/99-22.html, full paper:
 - $https://github.com/DrShymaa 2022/PhD_papers/blob/main/Towards Dynamic Optimal Alphabetic Tree.pdf$

After PhD

- 7- S. Arafat, "An Efficient simple Algorithm for Building Optimal Alphabetic Trees in Parallel", WSEAS International Conference on Algorithms and Scientific Computing, Vol 2, Issue3 of WSEAS Transaction on Computers, July 2003.
- 8- M.Syam, M. Hashem, S. Arafat, M. Mabrouk, "Neural Networks for Computer Virus Detection", *The 4th WSEAS International Conference on Neural Networks and Applications*, May 2003, Athens, Greece, Vol 2, Issue3 of WSEAS Transaction on Systems, July 2003.
- 9- M.Syam, Z. Fayed, S. Arafat, N.Hossam el Din, "Efficient Probabilistic Fault-tolerant Scheduling Algorithm for Real-time Tasks in Heterogeneous Multi-Processor Systems", *The 4th WSEAS International Conference on Computer Systems*, Dec 2004, *New York*. Vol 2, Issue3 of WSEAS Transaction on Systems, April 2004.

- 10-S. Arafat, "Encryption Using Alphabetic Trees", *The 3rd ACS/IEEE International Conference on Computer Systems and Applications, (AICCSA'05)*, Jan 2005, Cairo, Egypt; https://ieeexplore.ieee.org/abstract/document/1387083/
- 11-M.Syam, Z. Fayed, S. Arafat, N. .Hossam el Din, "An Efficient Online Scheduling Algorithm For Real Time Tasks In Multi Processor Systems", 2nd International conference on Intelligent computing & Information Systems ICICIS, 5-7 March 2005, Cairo, Egypt.
- 12- M.Syam, S.Arafat, A.Ibrahim, "A CFG Based Authorization Frame Work", 2nd International conference on Intelligent computing & Information Systems ICICIS, 5-7 March 2005, Cairo, Egypt.
- 13-M.Syam, M. Hashem, S. Arafat, M. Mabrouk, "Data Mining for Computer Virus Detection", 2nd International conference on Intelligent computing & Information Systems ICICIS, 5-7 March 2005, Cairo, Egypt.
- 14- M. Tolba, S. Arafat, R. Kotb, "Analysis of Alphabetic Tree Cipher", the 4th International Multi conference in Computer Science & Information Technology, 5-7 April 2006, Amman, Jordan.
- 15-S.Arafat, Y.Dakroury, A.Wahab, "An Efficient and Secure Ad hoc Routing Protocol", Global Engineering Science and Technology Society (GESTS)
 Transaction On Computer Science & Engineering, Vol. 32 and No.1, Sept.2006; https://dblp.org/pid/81/7056.html (was accepted in IEEE conference)
- 16- M. Tolba, S. Arafat, R. Kotb, "Comparing Alphabetic Tree Cipher (ATC) to RC5, RC6 and Rijndael", International journal on Intelligent Computing & Information Systems IJICIS, 2006.

Back From Retirement (in chronological order)

- 17- Draft talk on Algorithmic Game Theory (12/2019) https://m.facebook.com/story.php?story_fbid=1018702451817536&id=1000103337 25264
- 18- Draft talk on Blockchain Market Manipulation Attacks (3/2021) https://m.facebook.com/story.php?story_fbid=1386287771725667&id=1000103337 25264
- 19-S. Arafat, "Partitioning Bitcoin UTXOS Merkle Tree Into Different SubTrees To Reduce Proof Size", https://github.com/Shymaa-Arafat/lab2/blob/main/DeFi_2UTXOS2_NewOutline.pdf; (rejected by DeFi'22) Reviewer1: border line paper, reviewers2&3: Bitcoin issue, not related to DeFi. The detailed review reports can be found on the Facebook link. https://m.facebook.com/story.php?story_fbid=1567082160312893&id=1000103337 25264

- 20- S. Arafat, "Providing Non-inclusion Proofs in Bitcoin append to right UTXOS Merkles", https://github.com/Shymaa-Arafat/lab2/blob/main/DeFi_3fraudProofs.pdf; rejected by DeFi'22, Reviewer1&2: Bitcoin issue, not related to DeFi. The detailed review reports: https://m.facebook.com/story.php?story_fbid=1566310467056729&id=1000103337 25264
- 21- S. Arafat, " *The Effect of Propagation Delay Due to Geo-distribution on Blockchains*", https://github.com/Shymaa-Arafat/lab2/blob/main/DeFi_MOOC_Article.md, submitted in partial fulfillment of the DeFi MOOC course 2021
- 22- S. Arafat, "SoK: Can NFTs Solve The Economic Problems of Countries with Ancient Heritage? Egypt as a Case Study", https://github.com/Shymaa-Arafat/lab2/blob/main/CameraReady_1sprngr_EgyptN.pdf, https://youtu.be/mT7qSMvV7FQ; accepted by EAI BlockTEA 2022; published by Springer Verlag: https://link.springer.com/chapter/10.1007/978-3-031-31420-9 10.
- 23- S.Arafat, https://medium.com/@shymaa.arafat/what-are-verkle-trees-kzg-commitments-and-could-they-be-applied-on-bitcoin-cbf4838d18ac; an article submitted (on 6 May 2023) in partial fulfilment of the *Trailerblazer* Tier of the ZK MOOC course 2023.
- 24- S. Arafat, https://medium.com/@shymaa.arafat/fiat-shamir-transformation-and-its-security-problems-shymaa-m-a14d8f7d9192; an article submitted (on 6 May 2023) in partial fulfilment of the *Trailerblazer* Tier of the ZK MOOC course 2023.
- 25- S. Arafat, https://medium.com/@shymaa.arafat/metaverse-threats-liabilities-c7d8fd50a21d; 18/6/2023.
- 26- S. Arafat, https://medium.com/@shymaa.arafat/defi-attacks-part-1-1906a9307fe2; 21/6/2023.
- 27- S. Arafat, https://medium.com/@shymaa.arafat/defi-attacks-part-2-45c7e2c9c00; 25/6/2023.
- 28- S. Arafat, https://medium.com/@shymaa.arafat/cbdcs-part1-1da3a944722c; 7/2023
- 29- S. Arafat, https://medium.com/@shymaa.arafat/what-happened-to-polynetwork-2021-then-2023-2e991e29655b; 23/10/2023.
- 30- S. Arafat,
 https://github.com/DrShymaa2022/articles_papers/blob/main/Understanding_Cross_Chain_Interoperability_Solutions-part1.pdf; (available on medium too)30/10/2023
- 31- S. Arafat, https://medium.com/@shymaa.arafat/bugs-in-our-pockets-client-side-scanning-from-2021-to-2024-2442b286e501, presentation: https://youtu.be/Qq3FT3CferU
- 32- S.Arafat, https://medium.com/@shymaa.arafat/crypto-crimes-2023-2024-report-b73055ba9d8b

- 33- S. Arafat, "On the Estonian Internet Voting System, IVXV, SoK and Suggestions", https://www.researchgate.net/publication/383220628_On_the_Estonian_Internet_Voting_System_IVXV_SoK_and_Suggestions; extended version: https://eprint.iacr.org/2025/506
- 34- S. Arafat, "*Blockchains in Water Management & Trading*", https://www.researchgate.net/publication/382642184_A_Study_of_Blockchain_app lications_in_the_Water_Sector; a preprint.
- 35-S. Arafat, "A Study of Blockchain Consensus Protocols", https://www.researchgate.net/publication/382447691_A_Study_of_Blockchain_Consensus_Protocols; https://eprint.iacr.org/2025/637; this version is accepted by Cyber Security Journal (http://www.cybersecurity.springer.com/) to be printed in 2026.
- 36-S. Arafat, "WIP: Towards Hardcopy Solid Court Verifiability- A (2 Devices) (3 Receipts) in-Booth Electronic Voting System";

 https://github.com/DrShymaa2022/articles papers/blob/main/courtverify EVoteID

 final.pdf; earlier presentation: https://youtu.be/0wzcHdXEKHM
- 37- The main idea of [36] was <u>published as a poster</u> (based on abstract review only) in E-Vote-Id 2025 (https://e-vote-id-2025.inria.fr/pages/program.html); Poster: https://github.com/DrShymaa2022/E_Vote_ID_2025_posters/blob/main/CourtVerify2 Poster 9 9 25.pdf; Teaser video: https://youtu.be/7q7c7p8HqKI
- 38-S. Arafat, "Automated Ballot Stuffing with an Encrypted Vote: A Large-Scale Attack on the Estonian Internet Voting system, IVXV, and its Mitigation", published as E-Vote-Id 2025 poster (based on abstract review only); Poster: https://github.com/DrShymaa2022/E_Vote_ID_2025 posters/blob/main/Encryptedc opyattackPoster_13_9_25.pdf; Teaser video: https://youtu.be/QRmtfowimOg
- 39-S. Arafat, "Removing Insiders' Trust from the Estonian Internet Voting System (IVXV)", published as E-Vote-Id 2025 poster (based on abstract review only); Poster:

 https://github.com/DrShymaa2022/E_Vote_ID_2025_posters/blob/main/Insiders2TrustPoster79_25.pdf; Teaser video: https://youtu.be/joQ12G6KGzc