

# ***Resume***

## ***Personal***

**Name** *Shymaa M. Arafat*

**Birth Date** 1972

**Birth Place** *Malaysia*

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

**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**

242 Al Fath St., appartement 3, 2<sup>nd</sup> floor  
Janaklees,  
Alexandria,  
Egypt.



## ***Previous Positions***

- Visiting 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

### ZKP MOOC online course (Winter 2023)

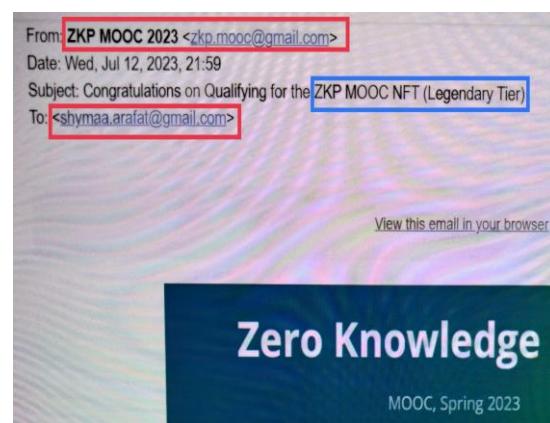
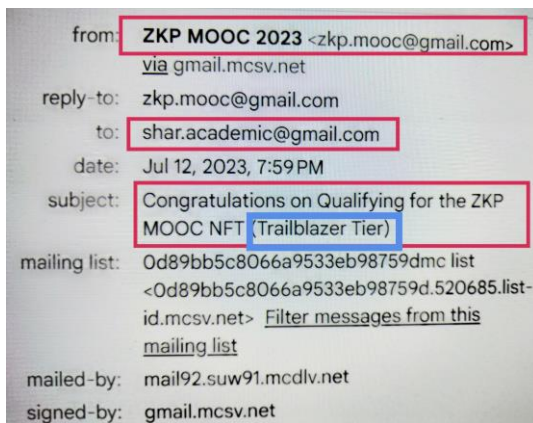
Zero Knowledge course offered by Berkeley University

<https://zkp-learning.org>

Earned Legendary Tier & Trailblazer Tier NFTs.

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

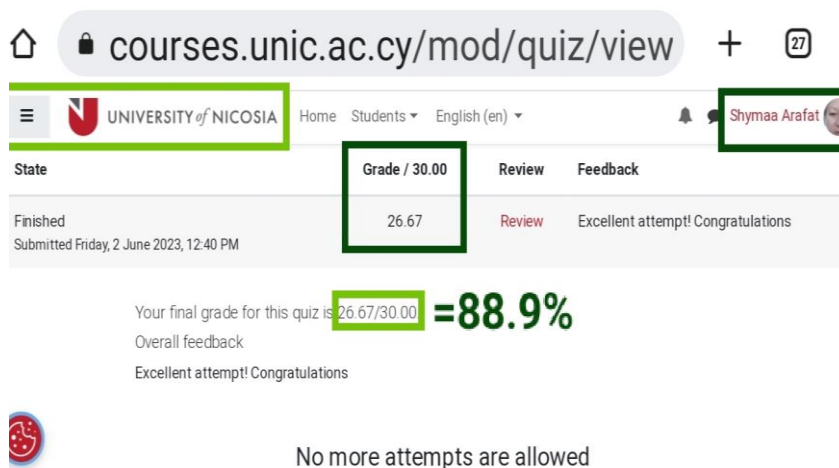
<http://basescan.org/tx/0x1f45129107b46fdea040761b6055e7a7f55326b0b40a72d0dbce536910523fdb>



### 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)



### 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/>

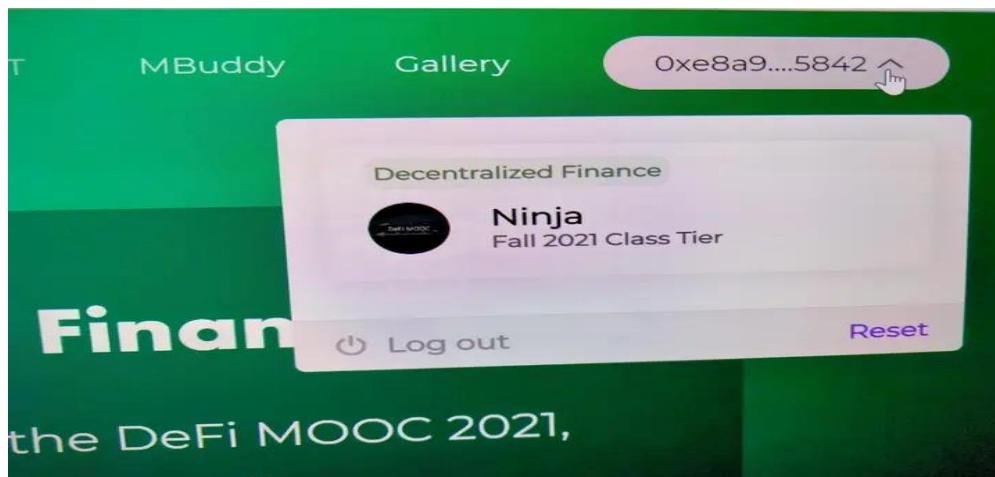
**DeFi MOOC online course** (Fall 2021)

Decentralized Finance course offered by Berkeley University

<https://defi-learning.org/f21>

Earned the NFT Ninja-Tier

<https://gallery.metamirror.space/detail/?item=defimooc2021nft-41>



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**Ph.D. in Computer Science** (July 2001)

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

[http://193.227.0.100/eulc\\_v5/Libraries/Thesis/BrowseThesisPages.aspx?fn=ThesisPicBoddy&BibID=10011669](http://193.227.0.100/eulc_v5/Libraries/Thesis/BrowseThesisPages.aspx?fn=ThesisPicBoddy&BibID=10011669)

(copy of the thesis is available at [https://github.com/DrShymaa2022/PhD\\_papers](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](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 Salam	Distinction
Hard Ware	Dr. Salah Selim & Dr. Layla Abu Hadid	V. Good
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 &amp; Automatic Control Dept.

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



## AMID-EAST Exams

TOEFEL 627 in 10/1995

TWE 4 in 10/1995

TSE 40 in 10/1996

Test of Spoken English  
EXAMINEE'S SCORE RECORD

NOTE FOR THE INSTITUTIONS: This score record has been supplied by the examinee. Scores are subject to verification by calling toll free 800-257-9547. Scores more than two years old cannot be verified. Photographs should not be accepted.

2055725 ARA

REGISTRATION NUMBER

OCT 96 F20

Month Year TEST DATE

TEST OF WRITTEN ENGLISH

TSE SCORE

40

EXAMINEE'S ADDRESS:

0002

ARAFAT SHYMAA M

242 ALFATH ST JANAKLEES

ALEXANDRIA

EGYPT

F2 0

TOEFL® EXAMINEE'S SCORE RECORD

2052582 ARA

REGISTRATION NUMBER

NAME (Family or Surname, Given, Middle)

ARAFAT-SHYMAA-M

OCT 95

Month Year TEST DATE

2513 78 07/25/72

5815 78 DATE OF BIRTH

2516 78

INST. CODE DEPT. CODE

F201 XXXX

CENTER NUMBER SPONSOR CODE

ARABIC NATIVE LANGUAGE

1 2

REASON FOR TAKING TOEFL

DEGREE TOEFL

EXAMINEE'S ADDRESS:

ARAFAT-SHYMAA-M

242 ALFATH ST JANAKLEES

ALEXANDRIA

EGYPT

F2 0

YOUR SIGNATURE

NAME OF COUNTRY ISSUING PASSPORT OR IDENTIFICATION

NUMBER ON IDENTIFICATION

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

GRE Subjective in Computer Science 84 in 11/1998

record because of their age, the mailing of these

BATCH NUM. - GEN: 4253-0010

MOST RECENTLY REPORTED GENERAL TEST

TEST DATE	MO	YR	TYPE	VERBAL	% BELOW	CORRECT	IN-CORRECT	OMITS
10 95N				380	21	32	44	00

MOST RECENTLY REPORTED SUBJECT TEST

TEST DATE	MO	YR	TYPE	CODE	SCORE	% BELOW	SS1
11 98N				29	780	84	

PREVIOUSLY REPORTED GENERAL TEST

GI = Graduate Institution or Fellowship Sponsor  
UI = Undergraduate Institution

Your GRE score record is printed below. See the reverse side for an explanation of your MOST RECENTLY REPORTED GENERAL TEST and/or SUBJECT TEST scores. The PREVIOUSLY REPORTED GENERAL TEST and SUBJECT TEST areas show all scores on record since 10/1/93. If you asked to have scores reported that are not part of this record because of their age, the mailing of these scores will be acknowledged separately.

10029 SHYMAA M ARAFAT  
242 ALFATH ST JANAKLEES  
ALEXANDRIA EGYPT

8464-007

BATCH NUM. - GEN: 4253-0010 SUB: 0661-0005

MOST RECENTLY REPORTED GENERAL TEST

TEST DATE	MO	YR	TYPE	VERBAL	% BELOW	CORRECT	IN-CORRECT	OMITS	ANALYTICAL	% BELOW	QUANTITATIVE	% BELOW
10 95N				380	21	32	44	00	780	95	56	04

MOST RECENTLY REPORTED SUBJECT TEST

TEST DATE	MO	YR	TYPE	CODE	SCORE	% BELOW	SS1	SS2	SS3	SS4	CORRECT	IN-CORRECT	OMITS	FORMULA
11 98N				29	780	84					45	16	09	41

PRINT DATE 12/05 BIRTH DATE 07/25

SUBJECT TEST CODES

## Activities

Winner of a research grant offered by the Center of Special Studies and Programs (CSSP), Bibliotheca Alexandrina (March 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 (at that time, now in Marymount University)

(involved a 2 weeks visit to SMU in 11/9/2005-25/9/2005)

## Teaching Experience

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

## ***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/LimitingSearchFor2DoptimalAlphabeticTrees\\_98.pdf](https://github.com/DrShymaa2022/PhD_papers/blob/main/LimitingSearchFor2DoptimalAlphabeticTrees_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 3<sup>rd</sup> 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/DrShymaa2022/PhD\\_papers/blob/main/TowardsDynamicOptimalAlphabeticTree.pdf](https://github.com/DrShymaa2022/PhD_papers/blob/main/TowardsDynamicOptimalAlphabeticTree.pdf)

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### **After PhD**

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- 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 4<sup>th</sup> 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 4<sup>th</sup> 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", *2<sup>nd</sup> 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", *2<sup>nd</sup> 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", *2<sup>nd</sup> 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 4<sup>th</sup> 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.

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### **Back From Retirement** (in chronological order)

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- 17- Draft talk on Algorithmic Game Theory (12/2019)  
[https://m.facebook.com/story.php?story\\_fbid=1018702451817536&id=100010333725264](https://m.facebook.com/story.php?story_fbid=1018702451817536&id=100010333725264)
- 18- Draft talk on Blockchain Market Manipulation Attacks (3/2021)  
[https://m.facebook.com/story.php?story\\_fbid=1386287771725667&id=100010333725264](https://m.facebook.com/story.php?story_fbid=1386287771725667&id=100010333725264)
- 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](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=100010333725264](https://m.facebook.com/story.php?story_fbid=1567082160312893&id=100010333725264)

- 20- S. Arafat, "*Providing Non-inclusion Proofs in Bitcoin append to right UTXOS Merkle*", [https://github.com/Shymaa-Arafat/lab2/blob/main/DeFi\\_3fraudProofs.pdf](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=100010333725264](https://m.facebook.com/story.php?story_fbid=1566310467056729&id=100010333725264)
- 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](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://github.com/Shymaa-Arafat/lab2/blob/main/CameraReady_1sprngr_EgyptN.pdf), <https://youtu.be/mT7qSMvV7FQ>; **accepted** by EAI BlockTEA 2022 Springer Verlag conference; [https://link.springer.com/chapter/10.1007/978-3-031-31420-9\\_10](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 fulfillment of the *Trailerblazer* Tier of the ZK MOOC course 2023.
- 24- S. Arafat, <https://medium.com/@shymaa.arafat/flat-shamir-transformation-and-its-security-problems-shymaa-m-a14d8f7d9192>; an article submitted (on 6 May 2023) in partial fulfillment 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/cbdc-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](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,  
[https://www.researchgate.net/publication/383220628\\_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); <https://eprint.iacr.org/2025/506>;  
 (older version rejected by E-Vote-ID'24, I've done major changes and it is still evolving; i.e. work in progress)
- 34- S. Arafat, "*Blockchains in Water Management & Trading*", [https://www.researchgate.net/publication/382642184\\_A\\_Study\\_of\\_Blockchain\\_applications\\_in\\_the\\_Water\\_Sector](https://www.researchgate.net/publication/382642184_A_Study_of_Blockchain_applications_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://www.researchgate.net/publication/382447691_A_Study_of_Blockchain_Consensus_Protocols); <https://eprint.iacr.org/2025/637>; this version is submitted to Cyber Security version after major revision, the paper is also submitted to SBC'25 (it is allowed to submit published or under review work to SBC'25)
- 36- S. Arafat, "*WIP: Towards Hardcopy Solid Court Verifiability- A (2 Devices) (3 Receipts) Electronic Voting System*", still work in progress,  
[https://www.researchgate.net/publication/382853901\\_WIP\\_now\\_we\\_can\\_have\\_enough\\_evidence\\_in\\_court-A\\_Simple\\_two\\_Devices\\_three\\_Receipts\\_in-booth\\_Voting\\_System](https://www.researchgate.net/publication/382853901_WIP_now_we_can_have_enough_evidence_in_court-A_Simple_two_Devices_three_Receipts_in-booth_Voting_System); presentation: <https://youtu.be/0wzcHdXEKHM>