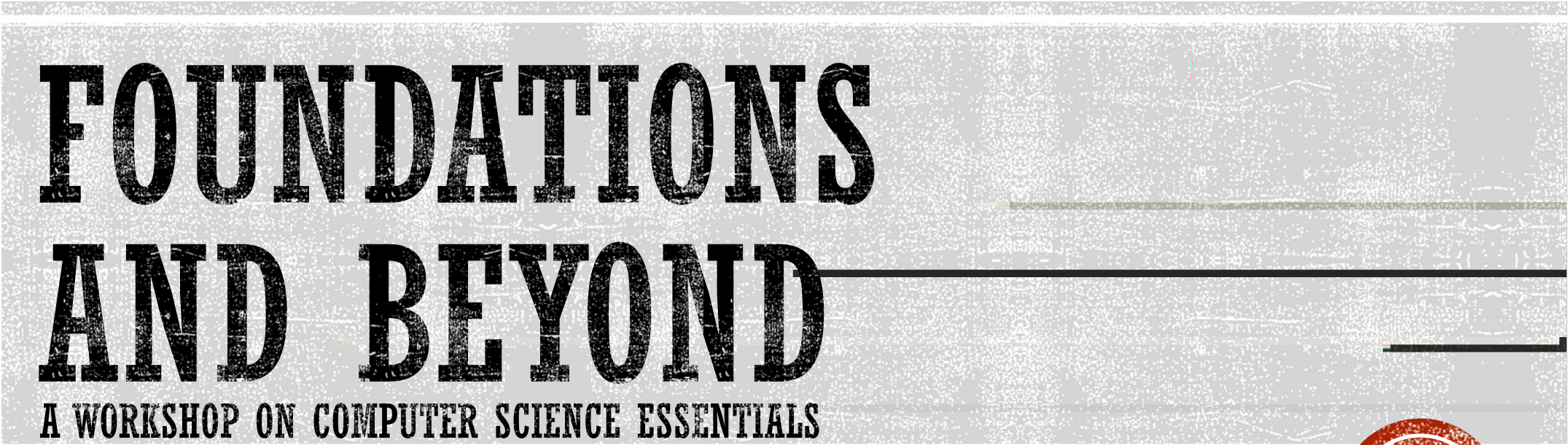
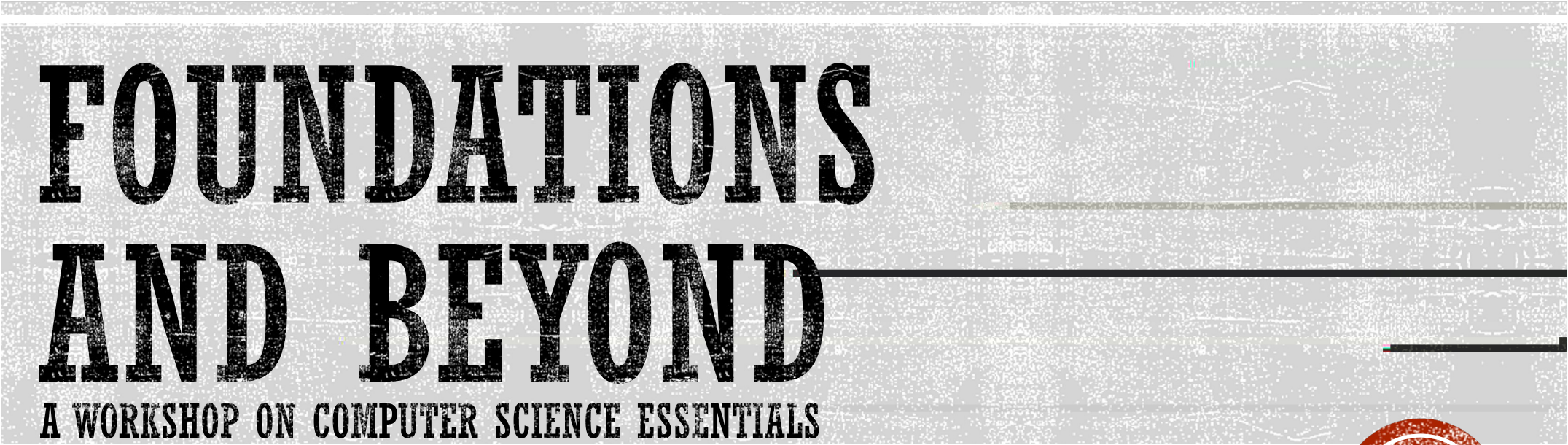
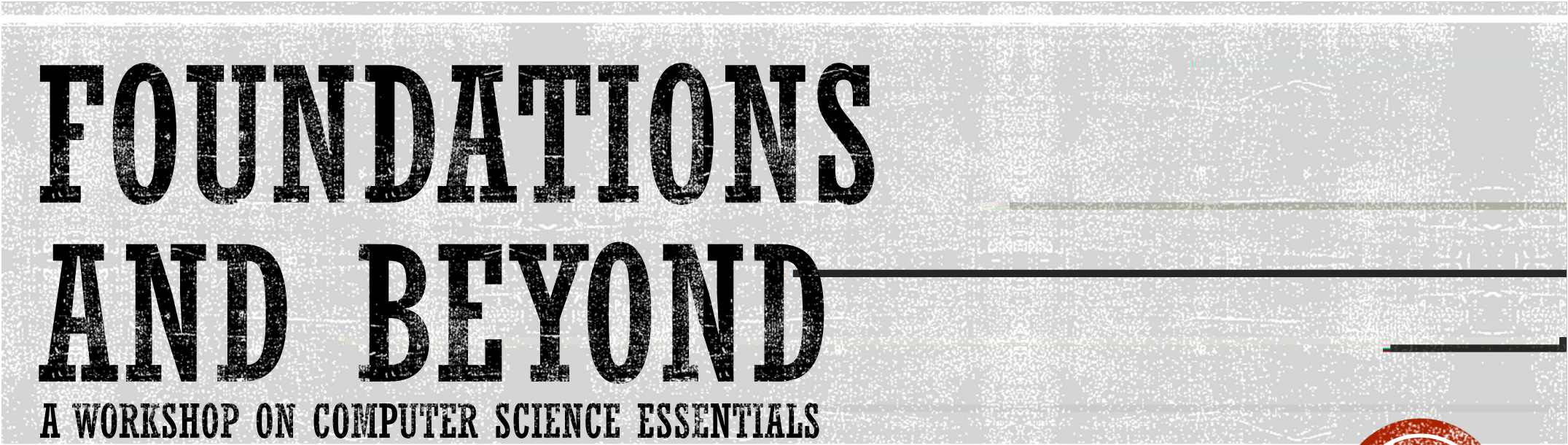
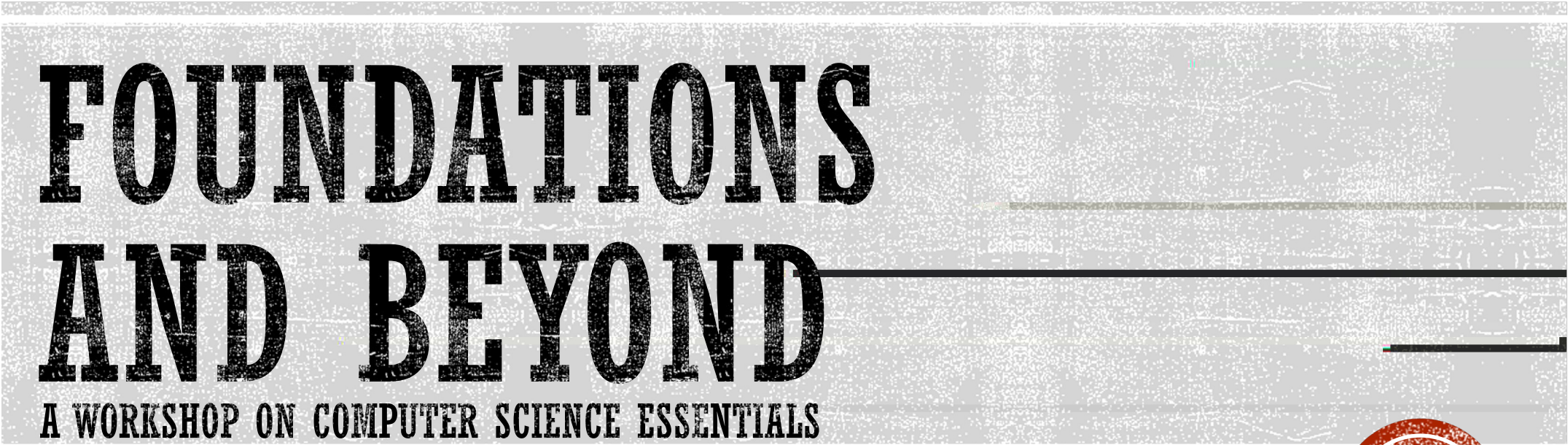


FOUNDATIONS AND BEYOND

A WORKSHOP ON COMPUTER SCIENCE ESSENTIALS

FOUNDATIONS AND BEYOND

A WORKSHOP ON COMPUTER SCIENCE ESSENTIALS



IMPORTANT CATEGORIES

- **Information Management and Communication**
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INTRODUCTION TO COMPUTER SCIENCE











UNDERSTANDING COMPUTATION

Curricular

- [illegible]

Co-Curricular

- 










PROGRAMMING CONCEPTS

Curricular

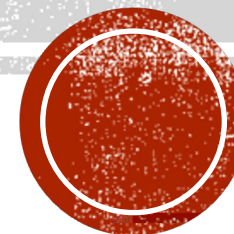
-
- A 4x4 grid of 16 squares, each containing a different arrangement of vertical lines of varying heights and positions, representing a binary-like code.

Co-Curricular

-
- The image shows a sequence of five rows of square blocks, each preceded by a red square. The blocks are arranged in a way that suggests a sequence or pattern, with some blocks containing internal lines or patterns.
- Row 1: A red square followed by a sequence of 15 square blocks. The first block is empty, the second is divided into four vertical sections, the third is divided into four vertical sections, the fourth is divided into four vertical sections, the fifth is divided into four vertical sections, the sixth is divided into four vertical sections, the seventh is divided into four vertical sections, the eighth is divided into four vertical sections, the ninth is divided into four vertical sections, the tenth is divided into four vertical sections, the eleventh is divided into four vertical sections, the twelfth is divided into four vertical sections, the thirteenth is divided into four vertical sections, the fourteenth is divided into four vertical sections, and the fifteenth is divided into four vertical sections.
 - Row 2: A red square followed by a sequence of 10 square blocks. The first block is empty, the second is divided into four vertical sections, the third is divided into four vertical sections, the fourth is divided into four vertical sections, the fifth is divided into four vertical sections, the sixth is divided into four vertical sections, the seventh is divided into four vertical sections, the eighth is divided into four vertical sections, the ninth is divided into four vertical sections, and the tenth is divided into four vertical sections.
 - Row 3: A red square followed by a sequence of 20 square blocks. The first block is empty, the second is divided into four vertical sections, the third is divided into four vertical sections, the fourth is divided into four vertical sections, the fifth is divided into four vertical sections, the sixth is divided into four vertical sections, the seventh is divided into four vertical sections, the eighth is divided into four vertical sections, the ninth is divided into four vertical sections, the tenth is divided into four vertical sections, the eleventh is divided into four vertical sections, the twelfth is divided into four vertical sections, the thirteenth is divided into four vertical sections, the fourteenth is divided into four vertical sections, the fifteenth is divided into four vertical sections, the sixteenth is divided into four vertical sections, the seventeenth is divided into four vertical sections, the eighteenth is divided into four vertical sections, the nineteenth is divided into four vertical sections, and the twentieth is divided into four vertical sections.
 - Row 4: A red square followed by a sequence of 10 square blocks. The first block is empty, the second is divided into four vertical sections, the third is divided into four vertical sections, the fourth is divided into four vertical sections, the fifth is divided into four vertical sections, the sixth is divided into four vertical sections, the seventh is divided into four vertical sections, the eighth is divided into four vertical sections, the ninth is divided into four vertical sections, and the tenth is divided into four vertical sections.
 - Row 5: A red square followed by a sequence of 15 square blocks. The first block is empty, the second is divided into four vertical sections, the third is divided into four vertical sections, the fourth is divided into four vertical sections, the fifth is divided into four vertical sections, the sixth is divided into four vertical sections, the seventh is divided into four vertical sections, the eighth is divided into four vertical sections, the ninth is divided into four vertical sections, the tenth is divided into four vertical sections, the eleventh is divided into four vertical sections, the twelfth is divided into four vertical sections, the thirteenth is divided into four vertical sections, the fourteenth is divided into four vertical sections, and the fifteenth is divided into four vertical sections.



APPLICATION COMPUTER SCIENCE



SOFTWARE DEVELOPMENT

Frontend Development

- User interface design and development
- Client-side scripting (JavaScript, TypeScript)
- Responsive design and cross-browser compatibility
- User experience (UX) research and testing
- Frontend framework development (React, Angular, Vue.js)
- Performance optimization and security
- Integration with backend services and APIs

Backend Development

- Server-side scripting (Python, Java, Ruby, PHP)
- Database management and optimization (MySQL, PostgreSQL, MongoDB)
- API development and integration
- Authentication and authorization systems
- Data processing and analytics
- Security and compliance
- Cloud deployment and infrastructure management



WEB DEVELOPMENT

Curricular

- [illegible]


Co-Curricular



- [illegible]



APP DEVELOPMENT

Curricular

- 

- 


Co-Curricular

- a)**
- b)**
- c)**
- d)**
- e)**



GAME DEVELOPMENT

Curricular

- a)**
- b)**

Co-Curricular

-



CORE COMPUTER SCIENCE



DATA SCIENCE

- a)**
- b)**
- c)**
- d)**



CLOUD COMPUTING

- 클라우드 컴퓨팅
- 클라우드 컴퓨팅의 특징
 - 사용자에 따라 서비스 수준을 조정할 수 있다
 - 사용자에 따라 비용을 지불할 수 있다
 - 사용자에 따라 성능을 조정할 수 있다
- 클라우드 컴퓨팅의 장점
 - 사용자에 따라 서비스를 사용할 수 있다
 - 사용자에 따라 서비스를 사용할 수 있다
 - 사용자에 따라 서비스를 사용할 수 있다
- 클라우드 컴퓨팅의 단점
 - 사용자에 따라 서비스를 사용할 수 있다
 - 사용자에 따라 서비스를 사용할 수 있다
 - 사용자에 따라 서비스를 사용할 수 있다



COMPETITIVE PROGRAMMING

- [illegible]



INTERNET OF THINGS

- 1. 2019 年 12 月 31 日，甲公司“应付账款”科目贷方余额为 100 万元，其中 2019 年 12 月 31 日尚未到期的应付账款为 80 万元；2020 年 1 月 1 日，甲公司“应付账款”科目贷方余额为 120 万元，其中 2020 年 1 月 1 日尚未到期的应付账款为 100 万元。
- 2. 2020 年 1 月 1 日，甲公司“应付账款”科目贷方余额为 120 万元，其中 2020 年 1 月 1 日尚未到期的应付账款为 100 万元；2020 年 1 月 1 日，甲公司“应付账款”科目贷方余额为 120 万元，其中 2020 年 1 月 1 日尚未到期的应付账款为 100 万元。
- 3. 2020 年 1 月 1 日，甲公司“应付账款”科目贷方余额为 120 万元，其中 2020 年 1 月 1 日尚未到期的应付账款为 100 万元；2020 年 1 月 1 日，甲公司“应付账款”科目贷方余额为 120 万元，其中 2020 年 1 月 1 日尚未到期的应付账款为 100 万元。
- 4. 2020 年 1 月 1 日，甲公司“应付账款”科目贷方余额为 120 万元，其中 2020 年 1 月 1 日尚未到期的应付账款为 100 万元；2020 年 1 月 1 日，甲公司“应付账款”科目贷方余额为 120 万元，其中 2020 年 1 月 1 日尚未到期的应付账款为 100 万元。
- 5. 2020 年 1 月 1 日，甲公司“应付账款”科目贷方余额为 120 万元，其中 2020 年 1 月 1 日尚未到期的应付账款为 100 万元；2020 年 1 月 1 日，甲公司“应付账款”科目贷方余额为 120 万元，其中 2020 年 1 月 1 日尚未到期的应付账款为 100 万元。
- 6. 2020 年 1 月 1 日，甲公司“应付账款”科目贷方余额为 120 万元，其中 2020 年 1 月 1 日尚未到期的应付账款为 100 万元；2020 年 1 月 1 日，甲公司“应付账款”科目贷方余额为 120 万元，其中 2020 年 1 月 1 日尚未到期的应付账款为 100 万元。



SPECIALIZATION IN COMPUTER SCIENCE



SPECIALIZATION IN COMPUTER SCIENCE

Cyber Security

- Cryptography and Network Security
- Security Management and Policy
- Incident Response and Forensics
- Security Architecture and Design
- Security Testing and Auditing
- Security Awareness and Training
- Security Research and Innovation

Blockchain and AR/VR

- Blockchain Technology and Applications
- AR/VR Development and Design
- Blockchain Security and Privacy
- AR/VR User Experience and Interaction
- Blockchain Governance and Regulation
- AR/VR Hardware and Software
- Blockchain and AR/VR Integration



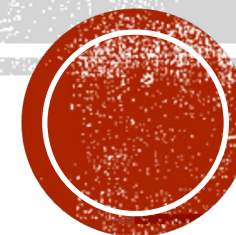
COMPUTER SCIENCE ROADMAPS

- [Computer Science Roadmap for Beginners](#)
- [Computer Science Roadmap for Intermediate Learners](#)
- [Computer Science Roadmap for Advanced Learners](#)
- [Computer Science Roadmap for Experts](#)
- Ultimate Roadmap for Computer Science: <https://dantusaikamal.medium.com/ultimate-roadmap-for-computer-science-ba2089408af8>
- Map of Computer Science (YouTube): https://youtu.be/SzJ46YA_RaA
- God-Tier Developer Roadmap (YouTube): <https://youtu.be/pEfrdAtAmaqk>



PROFILE DEVELOPMENT

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TOPICS TO COVER

- [illegible]

