

## Instructor Bio



**Marios Isaakidis**  
Director

PhD candidate at the University College London Information Security Group, researching the intersection of Decentralization and Privacy and their applications to socio-technical systems.

8+ years of experience as technical lead in agile teams across Europe and North America.

Since 2016 he has taught Computer Science modules at University College London, Birkbeck University of London, Cyprus University of Technology and Cyprus Institute of Marketing. Furthermore, he has been a visiting researcher at the University of Waterloo and delivered workshops on software development as a Software Carpentry instructor.

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## About infotropic

infotropic is a **Web3** development agency specializing in **Blockchain Technologies, Privacy Engineering and Protocol design**. Bringing a deep technical expertise paired with a clear understanding of Web3 business models, we aim to build foundational infrastructures for a **human-centric Internet**.

Our current projects include a toolkit for adding on-chain utilities to NFT collections, a cryptocurrency for the street food industry, a novel peer-to-peer overlay network with a focus on bypassing online censorship and surveillance, and simulating strategies for multi-hop message propagation over mesh topologies while protecting the privacy of the users' social graph.

# infotropic

## Web3 Technologies

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# Bootcamp: Introduction to Solidity

## Bootcamp Outline

Smart contracts are shaping a future Internet that revolves around people. Building on top of blockchain networks, they inherit properties such as verifiability, transparency and resistance to censorship, which allow us to redesign applications without relying on centralized intermediaries. At the same time, smart contracts pose a paradigm shift in programming, introducing new concepts and constraints throughout the development life cycle.

This hands-on bootcamp will get you up to speed with blockchain technologies, the Solidity programming language, and the Web3 development tools needed to build your own decentralized applications on Ethereum.

**Next cohort starting 6/12/2022**

# Programme

## Day 1: Blockchain and Object-Oriented Programming

- Blockchain fundamentals and properties
- Cryptographic and data structure primitives
- Web3 wallets and key management
- Consensus protocols
- Blockchain applications and limitations
- Smart contracts and Dapps
- Recap on Object-Oriented Programming
  - Classes and Objects
  - Visibility and Inheritance
  - Abstraction, Polymorphism and Overloading
  - OOP Design Patterns

## Day 2: Solidity Hands-On

- The Remix IDE
- Introduction to Solidity
  - Value types and Operations
  - Variables and Functions
  - Visibility and Modifiers
  - Structure of .sol source files
- Ethereum and Polygon testnets
- Deploying and interacting with smart contracts
- Validating source code on Etherscan
- More on Solidity
  - Events, Logging and Error handling
  - Interfaces, Abstract contracts and Inheritance
  - Block and transaction properties

## Days 3-4: Advanced Smart Contract Development

- Struct and Enum types
- Arrays and Mappings
- Memory, Storage and Calldata
- Receiving and withdrawing funds
- Calling other contracts
- ERC standards
- OpenZeppelin libraries
  - Token, Utils, Security and Proxy contracts
- Deep dive: ERC-20 token standard
- NFTs and DAOs
- Multi-Sig wallets
- Web3 ecosystem: ENS, IPFS, web3.js, Uniswap
- Security best practices
- Testing with foundry
- Static analysis with Slither
- Gas optimization
- Scalability and privacy solutions

## Prerequisites

This bootcamp is great for individuals working in Web3 in a non-technical capacity and want to increase their technical knowledge, or for individuals looking for an entry level technical route into the industry.

For each iteration of the bootcamp we adapt the material to the participants' interests and to revise key areas so as to assist them in achieving their professional objectives.

## Learning Outcomes

Through this bootcamp participants will be able to:

- Design, develop and test smart contracts with Solidity
- Deploy and interact with Dapps on Ethereum and other EVM blockchains
- Employ state-of-the-art smart contract development tools and libraries
- Review smart contracts and identify common vulnerabilities
- Assess blockchain platforms and architect Web3 applications that balance security, scalability, usability, privacy and gas fees



## Logistics

The bootcamp is delivered in-person at the infotropic.tech offices in Limassol, Cyprus. Accommodation and refreshments are covered by the organizers.

Price for 4-days bootcamp + accommodation: 2200 Euro.