PhD Curricula - Blockchain and Distributed Ledger Technology

Curriculum 2: Social systems and smart societies

Blockchain technology is increasingly seen as a tool for boosting data transparency and traceability in smart societies and social systems. As a decentralized infrastructure, blockchain can support the management of networks emerging from smart societies, like offering transparent services for the citizens, sharing public data, supporting decentralized identities (Self Sovereign Identities). In the context of social media, we see a clear evolution toward a decentralized model. Web3 proposal claims a vision of the Internet that can cut the intermediation of Big tech companies by completely decentralizing the web. This new model of the Web largely revolves around blockchain technology, which enables the integration of cryptocurrencies and tokens in many social media platforms. This gives the possibility both to reward users for their social actions and to define Non Fungible Tokens (NFTs), digital assets representing real-world objects like art, music, game items, videos so creating a new form of decentralized finance, the Social Finance (SocialFi). These platforms offer a new model which promise to be more private, secure, uncensored and compensatory for their members and to offer quality and trustable contents to the society to overcome the many issues of traditional social systems including data and content rights and monetization, fake news and excessive trolling.

The curriculum is focused on blockchain for smart societies and social systems and will develop both theoretical and applicative competences to develop new solutions for these platforms.
a) Theoretical aspects: several new and challenging theoretical issues arise when considering new models of social interaction. For instance new game theory models are required to describe the dynamics of decentralized markets. To understand the interplay among the social and economic layers at different scale requires not only the support of the technicians, but also of sociologists, lawyers, economists. Furthermore, the huge amount of transactions that a social system may generate demands for new solutions for improving the scalability of current blockchain (off-chain channels, side-chains,...).
b) Applications: several new scenarios are currently arising for the application of blockchain in the context of social and smart communities. Among them, of utmost interest are the integration of rewards and tokens in social platforms, the integration of the blockchain with metaverses, the development of blockchain-based platforms for smart communities.

Keywords:

- Smart Cities e Smart Communities
- Transparency and traceability
- Services to Citizens, Companies and Public Administrations.
- Tokenization
- Cybersecurity
- Inter-ledger technologies
- Self-Sovereign Identity
- Non Fungible Tokens (NFT) and Web3
- Social Interactions
- Vulnerabilities