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Work: AI, IoT, Middleware & Apps
Out of Work: Teaching AI & Ph.D Survival

# Opportunities and Challenges
## To become great software engineer in the future!

SAMSUNG

## 1. Pandemic Accelerated Changes

Accelerated adoption and demands on key techs
+ **AI:** Artificial Intelligence to augment human
+ **IoT:** Various edge devices that produce data
+ **Cloud:** CI/CD, DevOps, Microservices, Container
+ **Data:** Data science to get insights from data

**He found gravity during Pandemic**

## 2. Core Competencies

Moving from non-numerical to numerical algorithms
+ **Software:** Data structures and algorithms
+ **AI/DS:** Statistics, Probabilities, Numerical Optimization
+ **Languages:** Python and R (don't forget C/C++)
+ **Scopes:** Fundamental, Conceptual and Practical (FCP)

## 3. Culture of Future SWE

+ **What is Culture:** Reflection of What We Do Consistently
+ **What is Not Culture:** Dream, Slogan, Jargon, Vision, Mission
+ **Element:** State of Arts, Core Competencies, Proper Process
+ **Blocker:** Wrong mindset and Shortcut Process
+ The future of SWE HiTech Innovation!

Innovation + Culture = Culture of Innovation

## 4. Starting from Changing Mindset

+ **Mindset:** World is calling but you are sleeping!
+ **Sources:** Papers, books, blogs, article, .....
+ **Process:** Learning and innovating
+ **Competence:** Proof of competencies
+ **Community:** Special interest group
+ **Collaboration:** Combined Strengths
+ **Innovation:** Journey of problem solving

## 5. Artificial Intelligence

+ **Key Tech:** Vision, Speech and NLP/NLU
+ **Fundamental:** Statistics, Probabilities, Optimization
+ **Conceptual:** Deep Learning (Neural Networks)
+ **Practical:** PyTorch, Keras, Tensorflow (GPU)
+ **How to Learn:** Reproduce Papers, Books and MOOC

## 6. Data Science

+ **Key Tech:** Data Mining, Big Data Analysis....
+ **Fundamental:** Statistics, Probabilities, Optimization
+ **Conceptual:** Machine Learning Models
+ **Practical:** Spark, Storm, Scikit Learn
+ **How to Learn:** Reproduce Papers, Books and MOOC

## 7. Cloud Native

+ **Key Tech:** Container and Virtualization
+ **Fundamental:** Operating System and Virtualization
+ **Conceptual:** CI/CD and Microservices
+ **Practical:** CircleCI, Spinnaker, Docker, Kubernetes
+ **How to Learn:** Read books and MOOC
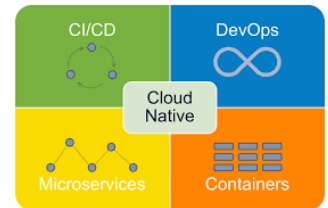
## 8. Summary and Call to Actions

+ **Mindset:** Wake up. Compete at global scale!
+ **Learning:** Learn in the right way
+ **Competence:** Balancing FCP in all subjects
+ **Community:** Start small, grow and mature
+ **Innovate:** Spend more time to understand problems
+ **Mentor:** Find and follow him with your best efforts!
+ **Recommendation:** We don't need more to get more!