Expert Lecture

(Session: - 2021-22)

Topic: - "Neural Architecture Search: - A Hardware Perspective**"**

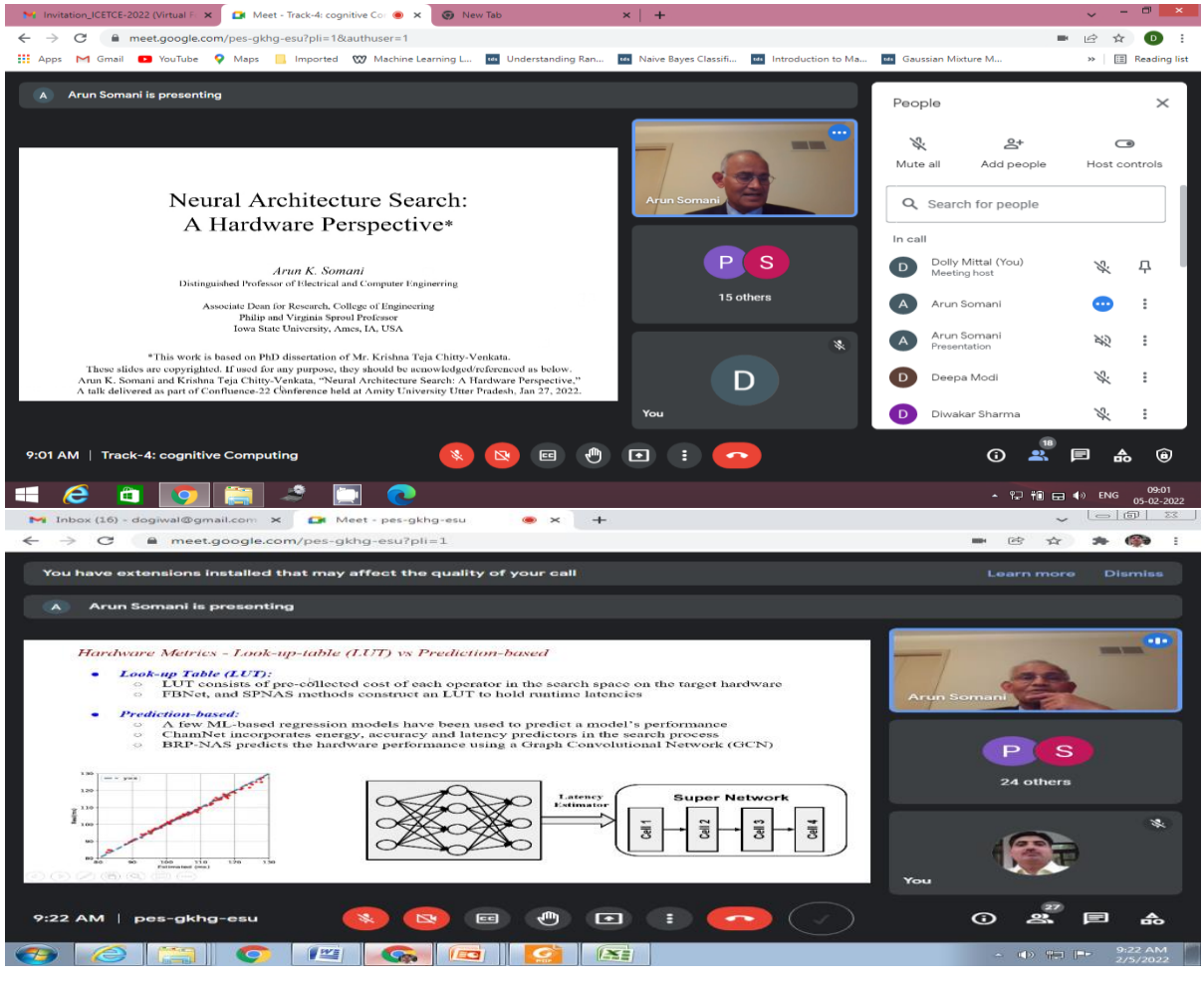
Date: - 05-02-2022(09:00 am - 11:30 am)

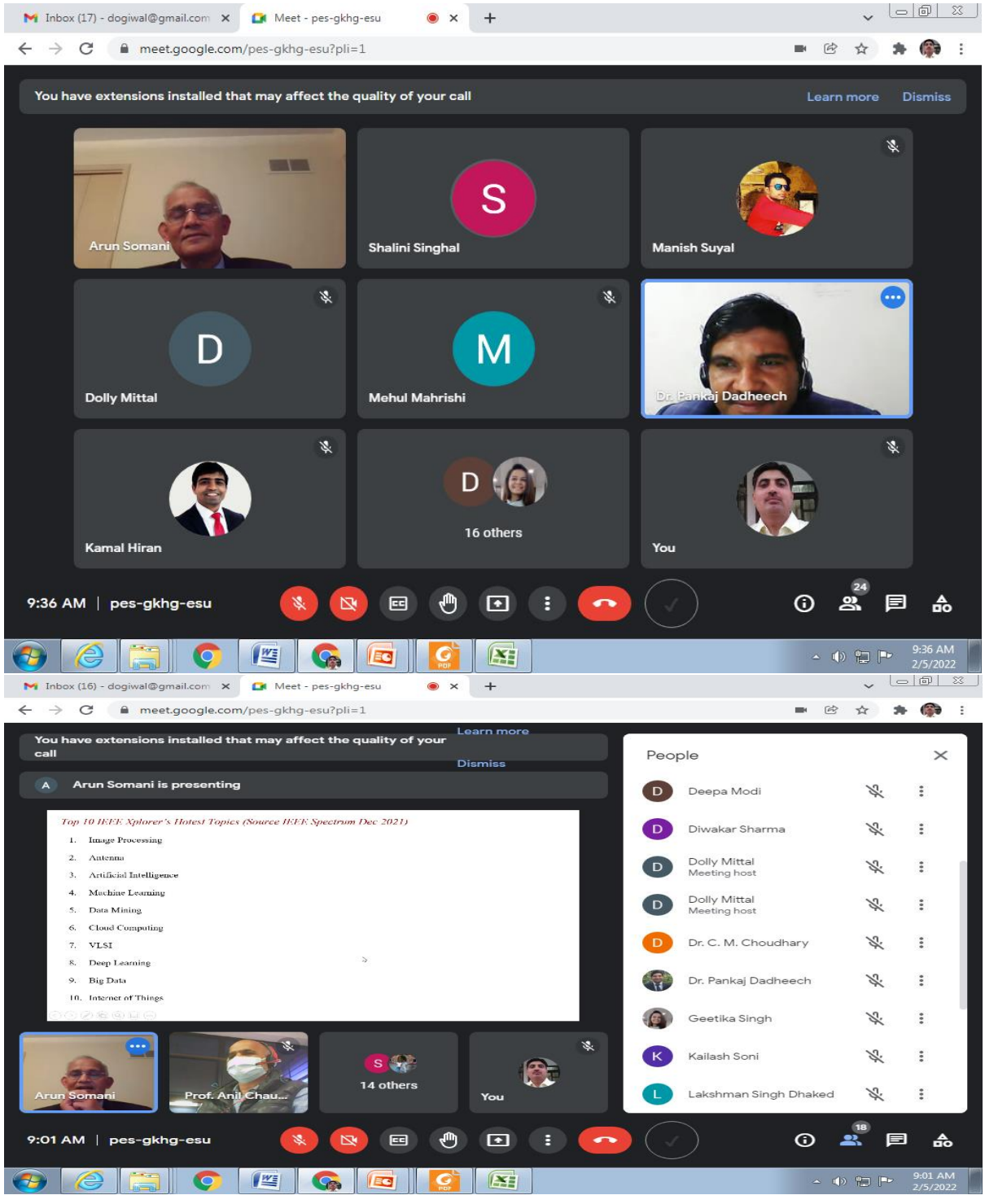
Resource Person: - Prof. (Dr.) Arun K. Somani, Associate Dean for Research, College of Engineering, Iowa State University, Ames, USA.

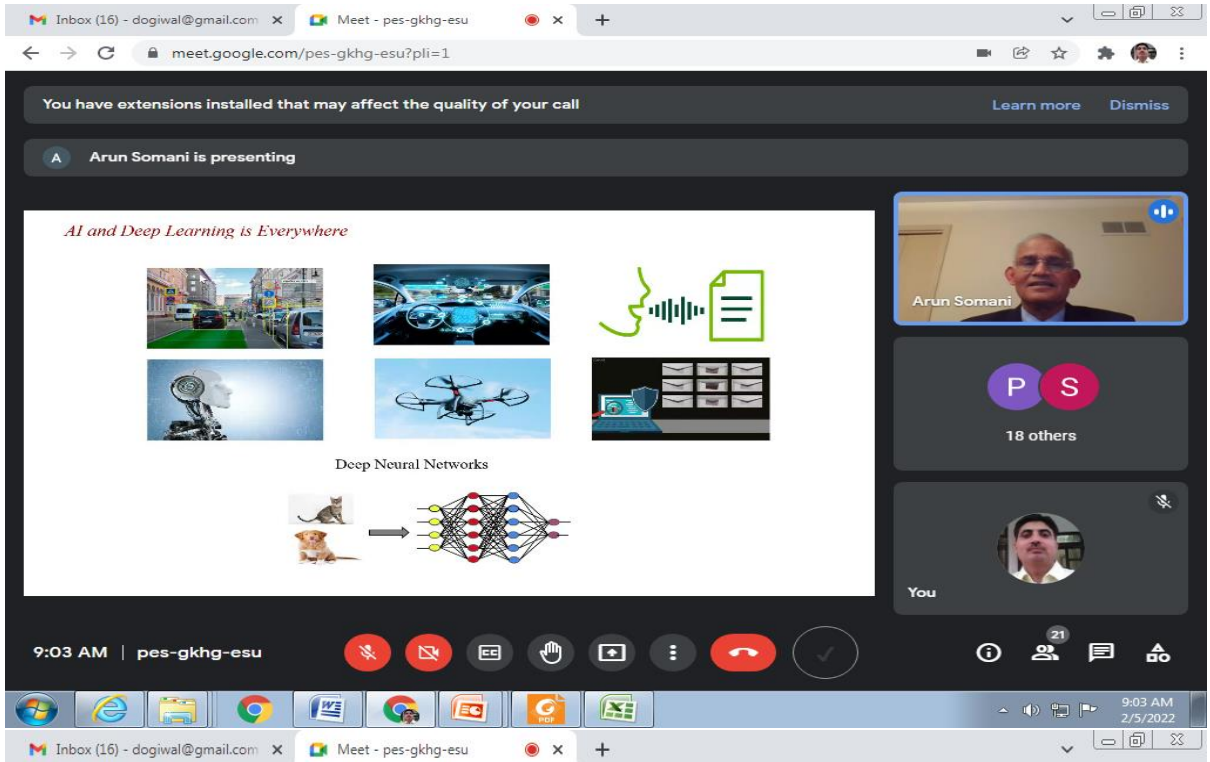
Prof. (Dr.) Arun K. Somani, Associate Dean for Research, gave his presentation on "Neural Architecture Search: - A Hardware Perspective". His main discussion points were:

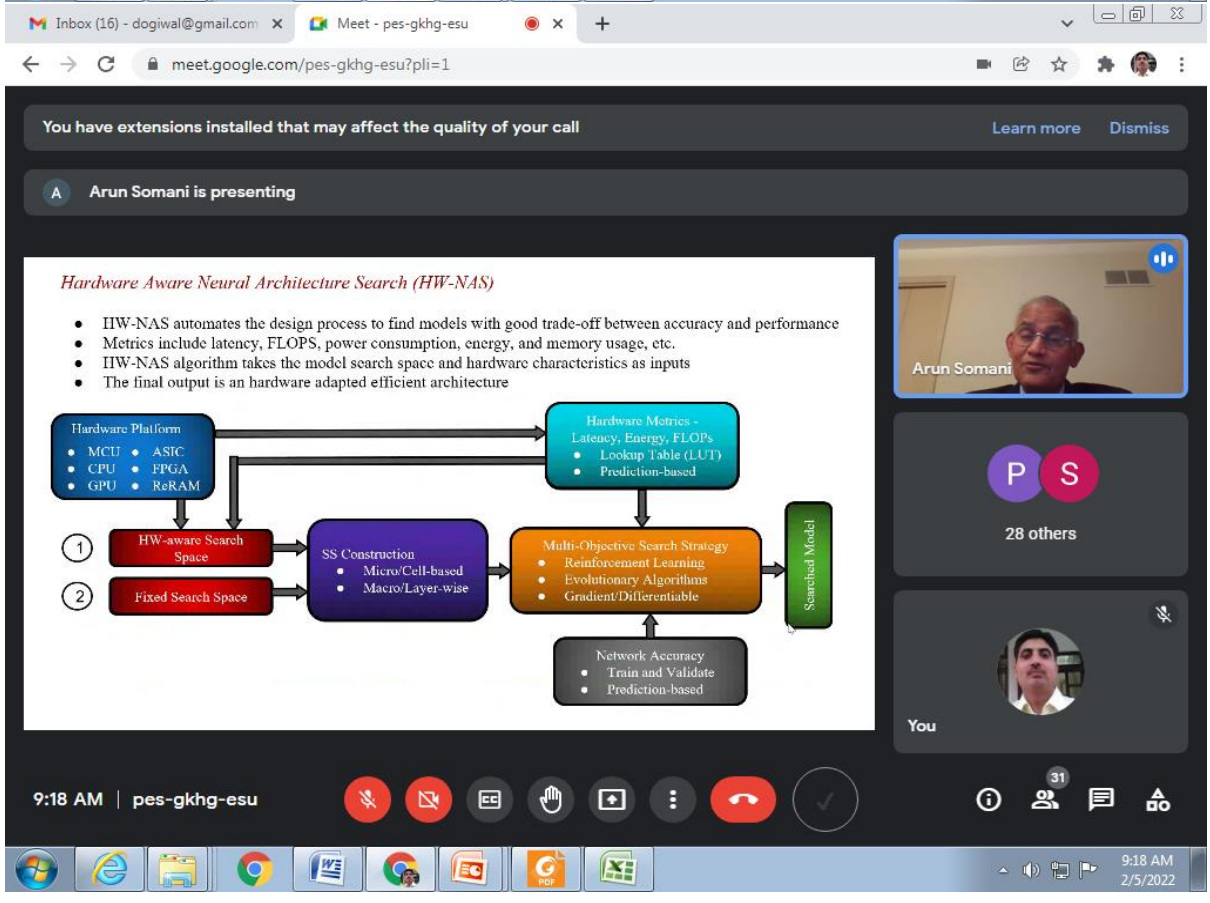
- He started the session with the basics of Hardware Perspective of Neural Architecture Search.
- He explained the neural network processing hardware.
- He also talked about Image and weight reuse without layer fusion.
- He also discussed various case studies on this like ASIC: Accelerator Aware NAS. .

At the end a very healthy question answer session also took place. Different questions were asked by the participants related to various applications of Deep learning in Image Processing.




Inbox (17) - dogiwal@gmail.com
Meet - pes-gkhg-esu
meet.google.com/pes-gkhg-esu?pli=1
You have extensions installed that may affect the quality of your call
Learn more
Dismiss
Arun Somani
Shalini Singhal
Manish Suyal
Dolly Mittal
Mehul Mahrishi
Dr. Pankaj Dadheech
Kamal Hiran
16 others
You
9:36 AM | pes-gkhg-esu
9:36 AM
2/5/2022
Inbox (16) - dogiwal@gmail.com
Meet - pes-gkhg-esu
meet.google.com/pes-gkhg-esu?pli=1
Learn more
You have extensions installed that may affect the quality of your call
Dismiss
Arun Somani is presenting
Top 10 IEEE Xplorer's Hotest Topics (Source IEEE Spectrum Dec 2021)
1. Image Processing
2. Antenna
3. Artificial Intelligence
4. Machine Learning
5. Data Mining
6. Cloud Computing
7. VLSI
8. Deep Learning
9. Big Data
10. Internet of Things
Arun Somani
Prof. Anil Chau...
14 others
You
People
Deepa Modi
Diwakar Sharma
Dolly Mittal
Meeting host
Dolly Mittal
Meeting host
Dr. C. M. Choudhary
Dr. Pankaj Dadheech
Geetika Singh
Kailash Soni
Lakshman Singh Dhaked
9:01 AM | pes-gkhg-esu
9:01 AM
2/5/2022


Inbox (16) - dogiwal@gmail.com
Meet - pes-gkhg-esu
meet.google.com/pes-gkhg-esu?pli=1
You have extensions installed that may affect the quality of your call
Learn more
Dismiss
Arun Somani is presenting
AI and Deep Learning is Everywhere
Deep Neural Networks
Arun Somani
P
S
18 others
You
9:03 AM | pes-gkhg-esu
9:03 AM
2/5/2022


Inbox (16) - dogiwal@gmail.com
Meet - pes-gkhg-esu
meet.google.com/pes-gkhg-esu?pli=1
You have extensions installed that may affect the quality of your call
Learn more
Dismiss
Arun Somani is presenting
Hardware Aware Neural Architecture Search (HW-NAS)
HW-NAS automates the design process to find models with good trade-off between accuracy and performance
Metrics include latency, FLOPS, power consumption, energy, and memory usage, etc.
HW-NAS algorithm takes the model search space and hardware characteristics as inputs
The final output is an hardware adapted efficient architecture
Hardware Platform
MCU
ASIC
CPU
FPGA
GPU
ReRAM
Hardware Metrics - Latency, Energy, FLOPs
Lookup Table (LUT)
Prediction-based
1
HW-aware Search Space
2
Fixed Search Space
SS Construction
Micro/Cell-based
Macro/Layer-wise
Multi-Objective Search Strategy
Reinforcement Learning
Evolutionary Algorithms
Gradient/Differentiable
Searched Model
Network Accuracy
Train and Validate
Prediction-based
Arun Somani
P
S
28 others
You
9:18 AM | pes-gkhg-esu
9:18 AM
2/5/2022