Yong Ma

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Hilights

13-year industrial R&D experiences for data-driven and AI/ML solutions with deep roots in signal processing, numerical optimization, and physics simulation.

Experience

Microsoft **Houston, TX**
Sr. Researcher *01/2024 –*
Efficient AI for Edge and Cloud at the Applied Sciences Group.

- Responsible for developments of AI models for various CV/streaming problems in Windows:
  - Improved users' perceptual quality and saved COGs across multiple use cases.
  - Drived model effiency for to real-time vison tasks across NPU, GPU and CPU.
  - In Research: Data-driven diffusion model for enhanced video super-resolution and denoising.

Aramco Americas **Houston, TX**
Staff AI Scientist *11/2021 – 12/2023*
AI solutions for upstream EP and sustainability projects.

- Led developments of deep learning models for CV-related applications in oil/gas production:
  - Detect GHG emissions & associated sources from hyperspectral images/videos,
  - Land cover classification and segmentation from aerial images,
  - Led a team of 5 to win the 1st place in Google Cloud Emission Hackathon in 2022.
- Led developments of physics-driven deep learning methods to model/monitor subsurface.
  - Built a CNN+LSTM model to predict subsurface structures and physical properties (e.g., sound speed),

Sinopec Tech Houston **Houston, TX**
Research Advisor *04/2021 – 10/2021*
Led R&D of model building and optimization for production projects in GPU cluster.

ConocoPhillips **Houston, TX**
Staff/Sr. Research Scientist *11/2012 – 03/2021*
Computational imaging and signal processing via AI/ML, numerical optimization and HPC.

- Led R&D of multiple regression models with optimization methods (e.g., GD, NLCG, BFGS, L-BFGS, etc.) for solving PDE-constrained least-squares imaging/inverse problems with more than 10^9 parameters.
  - Designed sparse-model regression via projected Hessian maxtrix to speed up convergence by >3X.
  - Developed advanced regularizations and losses to reduce local minima and improve convergence landscape.
- Led a team of 3-4 analysts to commercialize developed technologies & deployed models to 10+ projects.

Education

Colorado School of Mines **Golden, CO**
Ph.D. in Computational Geophysics *2007 – 2012*

Nanjing University **Nanjing, China**
M.Sc. in Acoustics & B.Sc. in EE *2000 – 2007*

Skills

Programming: Python, Java, C/C++ **HPC**: MPI, OpenMP, SIMD, CUDA
ML: PyTorch, TensorFlow, OpenCV, Numpy, Pandas