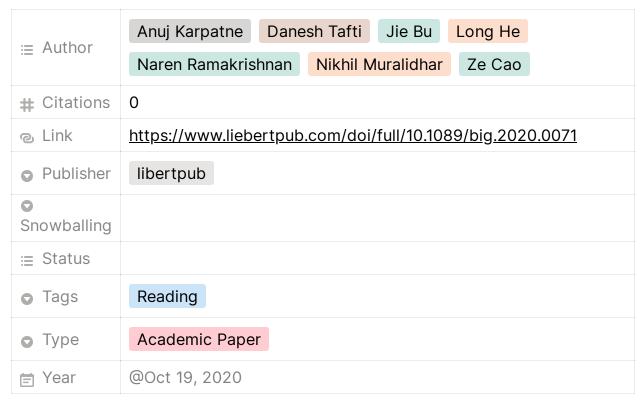
Physics-Guided Deep Learning for Drag Force Prediction in Dense Fluid-Particulate Systems



What did the authors try to accomplish?

- introduced PhyNet for Drag Force Prediction
- new approach since the relationship between input variables and output is not explicitly available from physical equations

What were the key elements of the approach?

- 1. physics-guided design of neural network architectures
 - each layer (partly convolutional) learns one of the various physical properties to produce drag force

- 2. learning with auxiliary tasks involving physical intermediate variables
 - sequential pattern: since earlier layers correspond to physical phenomena which have a direct effect on phenomena learned in deeper layers (→ physically consistent representation)
- 3. physics-guided aggregate supervision of neural network training
 - statistical constraints used during model training to encourage the learning of more physically consistent representations

What parts can you use yourself?

see Mind Map

What other references do you want to follow?

follow reference section