Machine Learning ONR - Dataset

Flow Physics	Geometry	Complexity	Reference
Steady flow	Rectangular Beam	Low	Zhang, P., Peterson, S. D., Porfiri, M., 2019: "Combined particle image velocimetry/digital image correlation for load estimation", Experimental Thermal and Fluid Science 100, 207-221
Periodic flow	Rigid Airfoil	Medium	Ann's Experiment
Air-backed impact	Circular	High	Zhang, P., Carretto, A., Porfiri, M., 2020: "Simultaneous digital image correlation/particle image velocimetry to unfold fluid-structure interaction during air-backed impact", Journal of Fluids and Structures 95, 102980
Water-backed impact of a panel	Plate	High	Zhang, P., Porfiri, M., 2019: "A combined digital image correlation/particle image velocimetry study of water-backed impact", Composite Structures 224, 111010
Water impact of a cylindrical shell	Cylindrical shell	High	Jalalisendi, M., Porfiri, M., 2018: "Water entry of cylindrical shells: theory and experiments", AIAA Journal 56(11), 4500-4514
Water impact of slender bodies	Slender compliant body	High	Jalalisendi, M., Porfiri, M., 2018: "Water entry of compliant slender bodies: theory and experiments", International Journal of Mechanical Sciences 149, 514-529 (special issue in honor of Dr. Batra's 70th birthday)
Wedge water impact with an obstacle Wedge water impact at different angles	Wedge	High	Jalalisendi, M., Benbelkacem, G., Porfiri, M., 2018: "Solid obstacles can reduce hydrodynamic loading during water entry", Physical Review Fluids 3(7), 074801 Russo, S., Jalalisendi, M., Falcucci, G., Porfiri, M., 2018: "Experimental characterization of oblique and asymmetric water entry", Experimental Thermal and Fluid Science 92, 141-161 Shams, A., Zhao, S., Porfiri, M., 2017: "Hydroelastic slamming of flexible wedges: modeling and experiments from water entry to exit", Physics of Fluids 29, 037107
Water Impact of Synthetic Foams	Plate	High	Shams, A., Zhao, S., Porfiri, M., 2017: "Water impact of syntactic foams", Materials 10(3), 224 (special issue on Syntactic Foams: Microstructural Characterisation and Effective Properties)