Data Driven Fluid Simulations Using Regression Forests

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Data Driven Fluid Simulations Using

Data-driven Fluid Simulations using Regression Forests. Data-driven Fluid Simulations using Regression Forests. L□ubor Ladicky´y. ETH Zurich SoHyeon Jeongy. ETH Zurich Barbara Solenthalery. ETH Zurich Marc Pollefeysy. ETH Zurich Markus Grossy. ETH Zurich Disney Research Zurich. Figure 1:The obtained results using our regression forest method, capable of simulating millions of particles in realtime.

Data-driven Fluid Simulations using Regression Forests

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October 2015; ACM Transactions on Graphics 34(6):1-9; DOI: 10.1145/2816795.2818129. Authors:

(PDF) Data-driven Fluid Simulations using Regression Forests

Toggle nav. Data-driven Fluid Simulations using Regression Forests L. Ladicky, S. Jeong, B. Solenthaler, M. Pollefeys, M. Gross Proceedings of ACM SIGGRAPH Asia (Kobe, Japan, 2-5 November, 2015), ACM Transactions on Graphics, vol. 34, no. 6, pp. 199:1--199:9 Abstract Traditional fluid simulations require large computational resources even for an average sized scene with the main bottleneck ...

CGL @ ETHZ - Data-driven Fluid Simulations using ...

Data-driven fluid simulations using regression forests. Computing methodologies. Computer graphics. Image manipulation. Rendering. Machine learning. Comments. Login options. Check if you have access through your login credentials or your institution to get full access on this article. ...

Data-driven fluid simulations using regression forests ...
Data-driven Fluid Simulations using Regression Forests #123. 0shimax opened this issue Dec 24, 2016 · 1 comment Labels. ComputerVision. Comments. Copy link Quote reply 0shimax commented Dec 24, 2016 ...

Data-driven Fluid Simulations using Regression Forests ...

A deep convolutional GAN (DCGAN) is developed for large data-driven fluid modelling. First use of DCGANs for predicting spatio-temporal nonlinear fluid flows. Predictive results from DCGAN and high fidelity model are in a good agreement. Using DCGAN the computational cost is reduced by five orders of magnitude.

Data-driven modelling of nonlinear spatio-temporal fluid ...

The data generated by DSMC are utilized to derive the underlying governing equations using a sparse regression method proposed recently. We demonstrate that this strategy is capable of deriving a variety of equations in fluid dynamics, such as the momentum equation, diffusion equation, Fokker□Planck equation and vorticity transport equation.

Data-driven discovery of governing equations for fluid ...
The objective is to develop a data-driven surrogate to numerical flow simulations. Two-dimensional LB simulation runs are used to train and to predict the solutions. Convolutional neural networks is used for predicting the fluid dynamics. The developed model can capture the dynamics of the problem at a much lower cost.

A data-driven surrogate to image-based flow simulations in ...
Especially in grid□based fluid simulation, because of iterative computation, the projection step is much more time□consuming than other steps. In this paper, we propose a novel data□driven projection method using an artificial neural

network to avoid iterative computation.

Data‐driven projection method in fluid simulation - Yang ...
Data-driven Fluid Simulations using Regression Forests Convolutional Neural Networks for Steady Flow Approximation Application of Convolutional Neural Network to Predict Airfoil Lift Coefficient

GitHub - IllusoryTime/Image-Based-CFD-Using-Deep-Learning ...
In fluid simulation, machine learning tech- niques have been used to replace [LJS15], speed up [TSSP17] or enhance existing solvers [XFCT18]. Given the amount of available fluid simulation data, data- driven approaches have emerged as

attractive solutions.

Deep Fluids: A Generative Network for Parameterized Fluid ...

This source code is based on mantaflow (http://mantaflow.com/), and it interpolates smoke and liquid simulations in order to perform data-driven fluid simulations. The approach calculates a dense space-time deformation using grid-based signed-distance functions of the inputs.

Interpolations of Smoke and Liquid Simulations | ACM ...

Data-driven Fluid Simulations using Regression Forests Another data-driven approach [Raveendran et al. 2014] aimed to generate a large number of fluid simulations by

interpolating existing preprocessed simulations.

Data Driven Fluid Simulations Using Regression Forests
This paper presents a novel generative model to synthesize fluid simulations from a set of reduced parameters. A convolutional neural network is trained on a collection of discrete, parameterizable fluid simulation velocity fields. Due to the capability of deep learning architectures to learn representative features of the data, our generative model is able to accurately approximate the training data set, while providing plausible interpolated in-between.

Deep Fluids: A Generative Network for Parameterized Fluid ...

In this paper, we introduce a machine learning-based simulation framework of general-purpose multibody dynamics (MBD). The aim of the framework is to construct a well-trained meta-model of MBD systems, based on a deep neural network (DNN). Since the main advantage of the meta-model is the enhancement of computational efficiency in returning solutions, the modeling would be beneficial for ...

Data-driven simulation for general-purpose multibody ...

@article{CRMECA_2020__348_8-9_729_0, author = {Yosra Kriaa and Amine Ammar and Bassem Zouari}, title = {Data-driven model based on the simulation of cracking process in brittle material using the phase-field method in application}, journal = {Comptes Rendus.

Data-driven model based on the simulation of cracking ...
Data driven VR simulation company VRAI has won a Defence and Security Accelerator (DASA) contract focused on improving the RAF's ability to measure and predict pilot performance using a combination of VR & data analytics technology. VRAI in Gateshead's Proto Centre, and RAFX based in the local airbase RAF Leeming, was awarded the £348k ...