

## 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

Another data-driven approach [Raveendran et al. 2014] aimed to generate a large number of fluid simulations by interpolating existing preprocessed simulations.

### (PDF) Data-driven Fluid Simulations using Regression Forests

Data-driven Fluid Simulations using Regression Forests Abstract. Traditional fluid simulations require large computational resources even for an average sized scene with the... Team. Results. Figure 1 : The obtained results using our regression forest method, capable of simulating millions of ...

### 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 ...

A data-driven surrogate to high-fidelity numerical flow simulations is presented by employing a deep convolutional neural network based on contracting paths and residual blocks. The network consists of only convolutional layers and can take any arbitrary-sized image as input and generate an output of a similar size.

### A data-driven surrogate to image-based flow simulations in ...

The discovery of governing equations from data is revolutionizing the development of some research fields, where the scientific data are abundant but the well-characterized quantitative descriptions are probably scarce. In this work, we propose to combine the direct simulation Monte Carlo (DSMC) method, which is a popular molecular simulation tool for gas flows, and machine learning to discover the governing equations for fluid dynamics.

### Data-driven discovery of governing equations for fluid ...

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 ...

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 ...

Recently, [UB18] developed a data- driven technique to predict fluid flows around bodies for interactive. c 2019 The Author(s) Computer Graphics Forum c 2019 The Eurographics Association and John Wiley & Sons Ltd. B. Kim et al. / Deep Fluids: A Generative Network for Parameterized Fluid Simulations.

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

Previously, most of the data-driven fluid simulations aimed towards to gaming/animation industry. In recent times, it is getting more and more common to see the research in the field of CFD applications such as turbulence, combustion, multiphase modeling, etc.

### Extracting data from VTK simulations using C++ : CFD

Data-driven modeling and validation. • The talk is focused on a “data-driven” modeling and validation of advanced models used for nuclear reactor thermal hydraulics simulation including both single-phase turbulent flow and multiphase flow with phase changes.

### **A Data-Driven Approach to Modeling and Validation of ...**

Data from experiments and direct simulations of turbulence have historically been used to calibrate simple engineering models such as those based on the Reynolds-averaged Navier–Stokes (RANS) equations. In the past few years, with the availability of large and diverse data sets, researchers have begun to explore methods to systematically inform turbulence models with data, with the goal of ...

### **Turbulence Modeling in the Age of Data | Annual Review of ...**

Fluid simulation can be automatically interpolated by using data-driven fluid simulations based on a space-time deformation. In this paper, we propose a novel data-driven fluid simulation scheme with the L0 based optical flow deformation method by matching two fluid surfaces rather than the L2 regularization. The L0 gradient smooth regularization can result in prominent structure of the fluid ...

### **SciProfiles**

Long Before Cambridge Analytica, Simulmatics Linked Data And Politics In If Then, author and New Yorker writer Jill Lepore unearths Simulmatics' story and makes the argument that the company paved ...

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