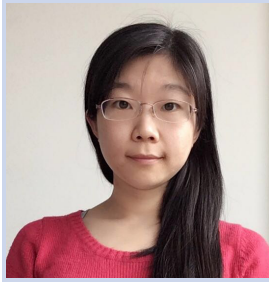


# Mengyu CHU



## PERSONAL DATA

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## EDUCATION

- |                       |   |
|-----------------------|---|
| MAY 2014 - Current    | Technische Universität München<br><i>Ph.D Student, Computer Science, <a href="#">I15 Games Engineering</a></i><br>Research Topic: Computer Graphics, Fluid Simulation, Machine Learning.<br>Advisor: <a href="#">Prof. Nils Thuerey</a> |
| SEP.2011 – APRIL.2014 | Zhejiang University, China<br><i>M.S., Computer Science, <a href="#">GAPS</a></i><br>Research Topic: Computer Graphics, Rendering, GPU, Advisor: <a href="#">Prof. Kun Zhou</a>   |
| AUG.2007 – JUN.2011   | Southeast University, China<br><i>B.Eng., Software Engineering</i><br><i>Outstanding Graduate Students Awards of SEU</i>  |

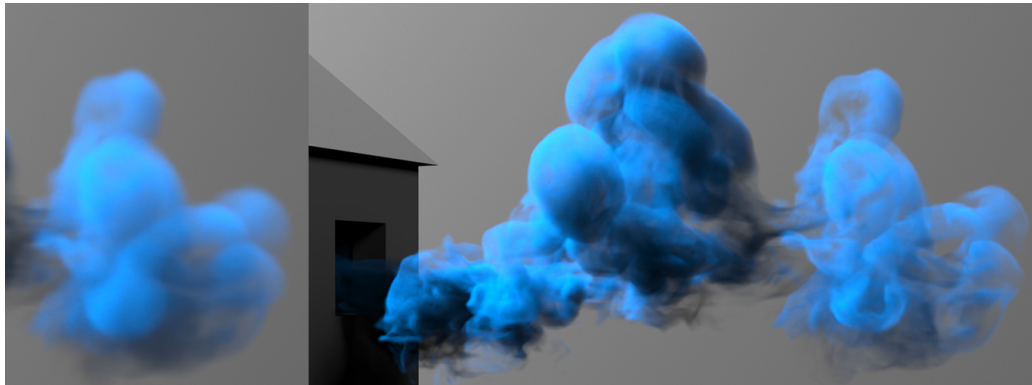
## PUBLICATIONS

- [1] Y. Xie , E. Franz and M. Chu and N. Thuerey, “[tempoGAN: A Temporally Coherent, Volumetric GAN for Super-resolution Fluid Flow](#)”, ACM Transactions on Graphics (SIGGRAPH Conference, 2018, Vancouver, Canada), Vol. 37, No. 4, Article 95

### DETAILS:

While targeting super-resolution fluid flow, this paper presents the first generative adversarial network for four-dimensional functions. The key contributions are:

- a novel temporal discriminator,
- a physics aware data augmentation method,
- output control using modified inputs

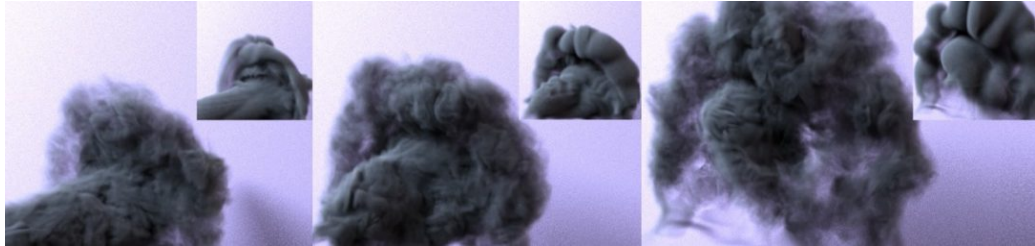


- [2] **Mengyu Chu** and Nils Thuerey, “[Data-Driven Synthesis of Smoke Flows with CNN-based Feature Descriptors](#)”, ACM Transactions on Graphics (SIGGRAPH Conference, 2017, Los Angeles, USA), Vol. 36, No. 4, Article 69

**DETAILS:**

This paper presents one of the very first combinations of convolutional neural networks and fluid simulations. The key contributions are:

- the computation of CNN-based fluid feature descriptors
- the generation of a reusable 4D fluid repository
- a patch advection method with deformation limiting



**RECEPTION:**

- corresponding SIGGRAPH talk made publicly available ([youtu.be/TMtd-IBl46g](https://youtu.be/TMtd-IBl46g), starting at 45:08).
- selected for Two Minutes Papers presentation ([youtu.be/Mu0ew2F-SSA](https://youtu.be/Mu0ew2F-SSA))
- official TUM press release (<https://www.in.tum.de/en/research/research-highlights/casting-call-for-clouds/>)

## PATENTS

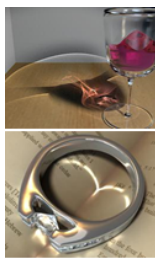
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- [1] Method and apparatus for modeling smoke turbulence based on patch  
*US 20170178344 A1*, Filing date *Jun 24, 2016*.  
Nahyup KANG, Mengyu CHU, Nils Thuerey, Hyong Euk Lee, Donghoon SAGONG

## THESIS

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- [1] *GPU-based Progressive Photon Relaxation*, M.Eng. Zhejiang University, Feb 2014. (Chinese)



**DETAILS:** This is a GPU implementation of the progressive photon relaxation algorithm using [SPAP](#). The program is three times faster than CPU-based algorithm while generating comparably high-quality results. The major contributions are:

1. Acceleration of photon emission with projection maps generated on GPU
2. Tracing persistent photons and multiple passes of transient photons on GPU
3. Using transient photons to refine the photon map gradually with GPU KD-tree
4. Gathering photons with GPU KD-tree
5. Support for nested refraction materials

- [2] *Nearly Rigid 2D Shape Deformation*, B.Eng. Southeast University, Jun 2011. (Chinese)



**DETAILS:** Based on the linear gradient domain mesh deformation algorithm proposed by Igarashi, this work improved the 2D shape deformation on these aspects:

1. Generating extra boundary polygons for input images
2. Using extra boundary polygons to preserve better image boundaries
3. Real-time mesh reordering based on triangle-mesh distance to avoid shape overlap

## TEACHING AND TUTORIALS

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- 2015-2018 Teaching assistant of the exercise part of the Game Physics course for three years, Technische Universität München
- 2012-2013 Teaching assistant of the C programming course, Zhejiang University
- 2011-2012 Teaching assistant of the Basic of Computer Science course, Zhejiang University

## SCHOLARSHIPS AND AWARDS

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- 2011-2012 Graduate of Merit at Zhejiang University (3% awarded)  
First-class Award of Honor for Graduate at Zhejiang University (15% awarded)
- JUNE 2011 Outstanding Graduate Student Awards at Southeast University (5% awarded)
- 2010-2011 Outstanding Academic Performance Awards at Southeast University (1% awarded)
- 2008-2009 The National Scholarship (2% awarded)