

# David Vanderhaeghe

[vdh@irit.fr](mailto:vdh@irit.fr)

## Master internship : Color point cloud structure for picture color grading

[dlyr](#)

We are looking for a highly motivated Master student for a research internship.

- **Keywords:** Image manipulation, Color grading, Point clouds, Computer Graphics
- **Advisor:** David Vanderhaeghe, Nicolas Mellado
- **Location:** Laboratoire IRIT, [STORM](#) research team, Université Paul Sabatier – Toulouse
- **Duration:** from February/March 2018, 5-7 months

The internship will take place in the IRIT laboratory, on the Université Paul Sabatier, campus of Toulouse. The recruited intern will be a full member of the research team, integrated with other team members, PhD students and permanent researches. He/she will participate to working groups, scientific seminars and other activities of our group.

### Context

Professional pictures present strong color ambiances influencing the style and the mood of the image. These ambiances are usually set at the capture stage using light spots of different colors or adjusted at the compositing stage.

Professional softwares (such as Photoshop) provide different tools to change the color temperature or shift color hues. These filters are applied globally on the image.

### Goal

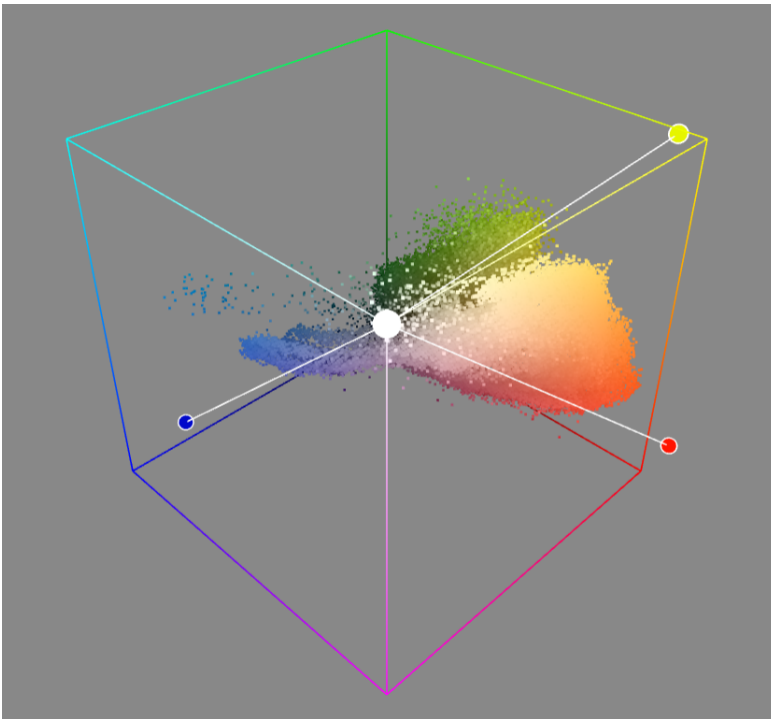
Following recent works [1,2] and preliminary investigations, the rgb point cloud (fig 1 right) corresponding to an image depicts structures that can enable image manipulation.

The purpose of this internship is to analyze the rgb point cloud to extract meaningful geometrical structures. Using this structure, the student has to propose tool to edit the image.

A preliminary result is presented below



Fig1 Example of an image and its associated point cloud



### Student profile

- Master student in Computer Science or Applied Mathematics
- Strong programming skills (C++), GPU programming (OpenGL)
- Basic knowledge on linear algebra and optimization algorithms
- Fluent English or French spoken

## How to apply

Send your application to David Vanderhaeghe (see mail above)

- a complete CV,
- previous internship reports if available,
- reference name/email address (optional)

## Bibliography

[1] Jianchao Tan, Jyh-Ming Lien, and Yotam Gingold. 2017. Decomposing images into layers via RGB-space geometry. *ACM Trans. Graph.* 36, 4, pages. DOI: <https://doi.org/10.1145/3072959.3126798>

[2] Sylvain Duchêne, Carlos Aliaga, Tania Pouli, and Patrick Pérez. 2017. Mixed illumination analysis in single image for interactive color grading. In *Proceedings of the Symposium on Non-Photorealistic Animation and Rendering (NPAR '17)*, Stephen N. Spencer (Ed.). ACM, New York, NY, USA, Article 10, 10 pages. DOI: <https://doi.org/10.1145/3092919.3092927>

[« Master internship : Stroke based rendering by example](#)