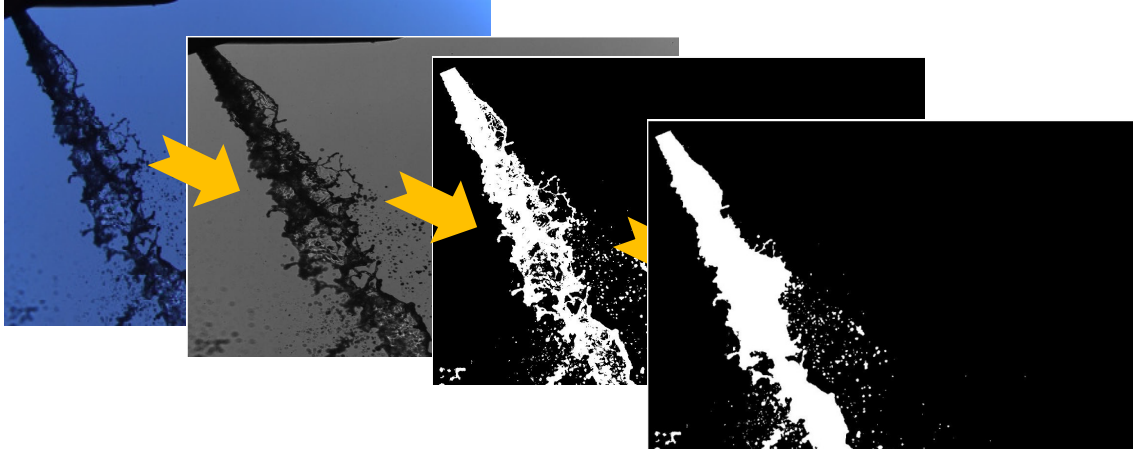


Sujet de stage Ingénieur 1ère ou 2ème année

Engineering internship 2-3months 2012 : « Mathematical & Numerical Image Treatment »



To decrease the fuel consumption and the pollutant emissions from automotive combustion engines it is of first importance to master the high pressure injected spray. A testbench exists in Continental Toulouse R&D center which returns spray images. Such images needs to be numerically treated.

The Digital Image Treatment [1,2] takes benefit of multiple developments with application on videos, and a non negligible mathematical background [3].

This internship is dedicated to apply classical methods of filtering, shape analysis as presented for instance in ref [4] and in matlab wiki community. Test of other softwares (formal mathematics, as Maple or Mathematica) will be made. The student will also assemble existing post-processing into a tool suite and apply it to representative spray pictures.

Références:

1. See for instance , <http://www.mathworks.com/matlabcentral/fileexchange/12413-digital-image-correlation-and-tracking>
2. J.Serra, Image Analysis Academic Presse, London, 1982,
3. B. Naegel, Mines de Nancy « Mathematical Morphology », Course 2011
4. C. Solomon and T. Breckon, Fundamentals of digital image processing, a practical approach with example in matlab, Wiley-Blackwell Ed., 2011

Student profile: Engineering School, Master of science, oriented numerical methods, computation, Applied Mathematics. Request: Programming language skills and matlab knowhow.

Internship Period financially funded: YES

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