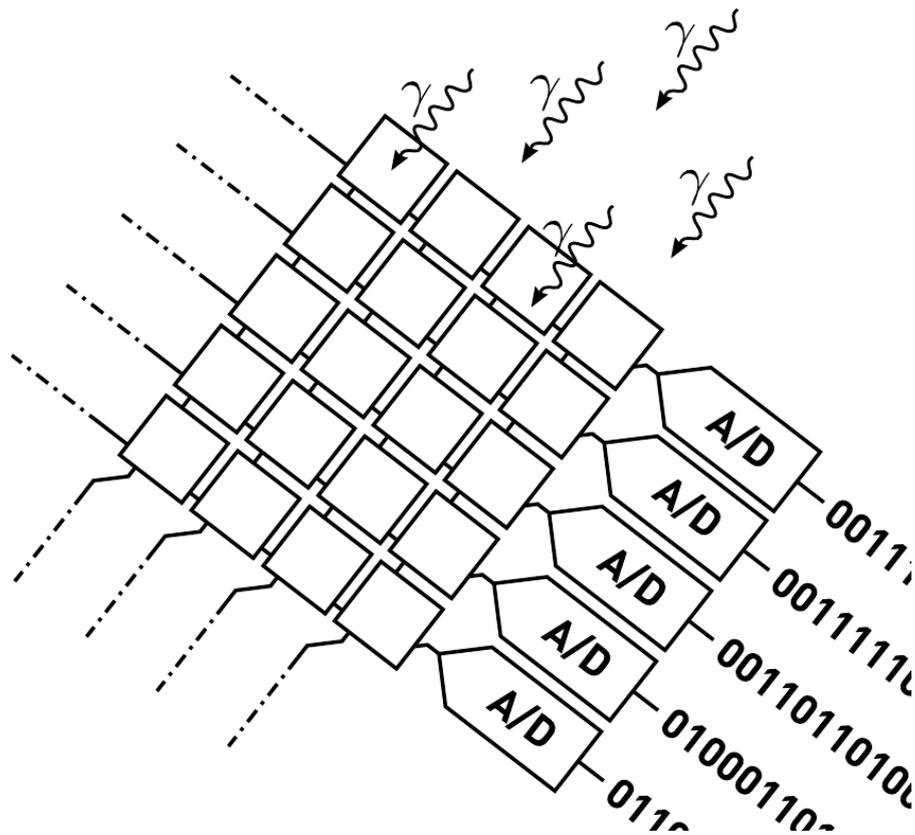


Topic for Diploma Thesis:

Design of a High-Speed 12-bit Column-Parallel Ramp ADC for CMOS Image sensors



High speed and high resolution 2D video imaging has always been a necessity. The dominating limitation in increasing the video capturing rates in CMOS image sensors is the data conversion speed within the camera's sensor. The offered work focuses on the study of high-speed column-parallel single-slope (also known as ramp) ADC architectures. The student is expected to start with a feasibility study of pre-set image sensor specification parameters. The former will be the seed for the ADC design requirements, architectural exploration and final implementation in a 90nm CMOS process.

Photalitics owns one of the fastest 12-bit single-slope ADC architectures presented, which works based on a hybrid Time-to-Digital Converter architecture, which has been well documented and published. However, there is room for improvement and transformation into a 13-bit low-noise high-

speed ADC design. To achieve this with the current architecture, new concepts need to be invented in both clock generation and distribution, jitter analysis, as well as a novel and refined continuous-time comparator design.

If you are enthusiastic in working on analog integrated circuit design, using state-of-the-art CMOS fabrication nodes and tools, you are very welcome to join our R&D design team where you would be guided and supported on a daily basis. Possible tasks for the design include theoretical modelling, practical circuit design, simulation, systems design, and layout. If the student is a fast-learner and is able to deliver a design matching with our testchip fabrication schedules, there is a possibility for inclusion of his own design with our test devices. This would lead to a thesis including a real chip fabrication and possibilities for evaluation and measurement.

The thesis work can be combined with an internship, whose total duration can be flexible and subject to negotiations.

Additional information on the thesis topic can be obtained by Deyan Levski at deyan.levski@photolitics.com

About Photolitics

Photolitics is a custom image sensor design house, specializing in industrial machine vision CMOS Image Sensor development, miniature medical endoscopic camera modules and mixed-signal ASIC design. We are a group of world-class IC design professionals with multi-decade experience in photonic IC design, CMOS Image Sensors and analog mixed-mode integrated circuits. Through our wide network of connections we distinguish ourselves as a small IC design house, with exciting opportunities for growth and professional development.

To find out more about us, visit our website: <http://photolitics.com>
