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Amir Finkelstein* (amir.f22@gmail.com), Haifa, Israel. *Introduction to semi-discrete calculus*. Preliminary report.

Ever since the early 1980's, computer scientists have been using an algorithm named "Summed Area Tables", also known as "Integral Image". This algorithm was shown to provide a tremendous computational gain, since it fits precisely to the needs of discrete geometry researchers, due to its discrete nature. In 2007, Wang and his colleagues suggested a rigorous formulation of an extension to this algorithm (discrete Green's theorem), and in this book it is suggested, among others, that a decisive parameter at this theorem can be naturally defined via a simpler pointwise operator than the derivative. The main operator of this theory is defined by a mixture of the discrete and continuous, to form a semi discrete and more efficient operator than the derivative, given that one aims at classification of monotony. This approach to analyze functions is hence more suitable for computers (in order to save computation time), and the simplicity of the definition allows further research in other areas of classical analysis. (Received August 11, 2010)