Gerald FARIN and Dianne HANSFORD. *Practical Linear Algebra - A Geometric Toolbook.* A.K. Peters, (2005). xvi + 394 pages. Hardcover, ISBN 1-56881- 234-5.

This is a Linear algebra book written essentially for students in engineering and computer sciences. The book has a special flavor: the starting point is the observation that the animation of objects in a computer game is based on linear algebra. This observation is then used and illustrated all along the text. For instance linear maps are described by their effect on 2D and 3D objects (rotations, dilatations, symmetry). The authors explain how to move a 2D or a 3D object by a sequence of affine maps. Linear algebra is thus approached in a geometric and algorithmic way (with a lot of illustrations and numerical examples) rather than the rigorous theorem proof format used in standard texts.

The content covers standard and less standard topics : linear maps in 2D and 3D, affine maps, general linear systems, symmetric matrices, eigenvectors, numerical methods (the condition of a map, the Houselholder method, the Gauss-Jacobi iteration principle), polygons (convexity), curves (Bezier curves). This mixture of linear algebra, geometry and numerical aspects is very interesting and will probably stimulate the students. The book is very well presented and very clear. There is also a website associated to the book that provides additional material and the PostScript files used in the text.

Yves FÉLIX

K. ECKER. *Regularity Theory for Mean Curvature Flow.* Birkäuser, Boston (2004). xi + 165 pages. Hardcover, ISBN 0-8176-3243-3.

Starting with a smooth hypersurface in Euclidean space, one would like to deform it infinitesimally in such a way that its area decreases. The mean curvature flow evolves the hypersurface in its normal direction with a local speed equal to the mean curvature. Thus minimal hypersurfaces are stationary for this evolution problem. This is also the steepest descent flow for the area functional.

There are several approaches to mean curvature flow including that developed by L.C. Evans and J. Spruck in the early nineties (*Motion of level-sets by mean curvature I, II, III*). Formerly K.A. Brakke had used the setting of Geometric Measure Theory to attack the problem (*The motion of a surface by its mean curvature*, 1978). The hypersurfaces evolving according to this flow develop natural singularities in a finite time; this explains the relevance of Geometric Measure Theory for describing the solutions after they stop being smooth.

The book under review is a short and very readable account on recent results obtained about the structure of singularities. It includes Huisken's recent monotonicity formula. Chapter 5 is a discussion of K.A. Brakke's regularity Theorem as well as the works of T. Ilmanen and B. White.

Some familiarity with evolution partial differential equations and/or regularity theory of stationary varifolds may help the reader of this book. On the other hand it is definitely an interesting purchase if one wants to gain some technical insight in related nonlinear evolution problems such as the harmonic map heat flow or Hamilton's Ricci flow for metrics.

Thierry DEPAUW