

Matemaattis-luonnontieteellinen		Matematiikan laitos	
Tekijä — Författare Kari Miettinen			
Työn nimi — Arbetets titel Numerical methods for unconstrained minimization: an integrated computational environment			
Oppiaine — Läroämne Matematiikka, opettajan suuntautumisvaihtoehto			
Työn laji — Arbetets art Pro gradu - tutkielma		Aika — Datum 22.2.1993	Sivumäärä — Sidoantal 87 + 1 levyke
Tiivistelmä — Referat <p>This study discusses the methods, algorithms and implementation techniques involved in the computational solution of unconstrained minimization problem :</p> $\min_{x \in R^n} f : R^n \longrightarrow R$ <p>where R^n denotes the n-dimensional Euclidean space.</p> <p>The main goal in this study was to implement an easy-to-use software package running in personal computers for unconstrained minimization of multidimensional functions. This software package includes C language implementations of six minimization methods (listed below), an user-interface for entering each minimization problem, and an interface to a general software system called <i>MathematicaTM</i> which is used for plotting the problem function and the minimization route. The following minimization methods are discussed here :</p> <ul style="list-style-type: none"> • Parabolic interpolation in one-dimension • Downhill simplex method in multidimensions • Direction set method in multidimensions • Variable metric method in multidimensions • Conjugate gradients method in multidimensions • Modified steepest descent method in multidimensions <p>The first part of this study discusses the theoretical background of the minimization algorithms to be implemented in the software package. The second part introduces the overall design of the minimization software and in greater detail describes the individual software modules, which, as a whole, implement the software package. The third part introduces the techniques for testing the minimization algorithms, describes the set of test problems, and discusses the test results.</p>			
Avainsanat — Nyckelord Unconstrained minimization			
Säilytyspaikka — Förvaringställe Matematiikan laitos/HY			
Muita tietoja — Övriga uppgifter			