

Optimization – Laboratory 5

Conjugate gradient method

The function in Section 4.3 is given by the number assigned in the column **P4** from the status.

Requirements:

I. Conjugate gradient method

- Draw the contour plot of the function in Matlab.
- Calculate 3 steps on paper for *conjugate gradient method*. Choose a constant step-size. Hint: a step-size of the order $\frac{1}{\|d_k\|}$ should be acceptable.
- Implement in MATLAB *conjugate gradient method* with variable step. Choose at least two of the formulas used to compute β , which is used to obtain the direction.
- Draw the points obtained by your implementation on the contour plot. Does the trajectory converge to a minimum point? Compare the obtained results.

Hint: The tolerance for line search should be at least 100 times lower than the tolerance of the method.