



FEATURE SELECTION FOR THE SHEAR STRESS CLASSIFICATION OF HIP IMPLANT SURFACE TOPOGRAPHIES

Aleksandra Vulović^{1,2}, Tijana Geroski^{1,2}, Nenad Filipović^{1,2}

¹ Faculty of Engineering, University of Kragujevac, Sestre Janjić 6, 34000 Kragujevac, Serbia
e-mail: aleksandra.vulovic@kg.ac.rs; tijanas@kg.ac.rs; fica@kg.ac.rs

² Bioengineering Research and Development Center (BioIRC), Prvoslava Stojanovića 6,
34000 Kragujevac, Serbia

Abstract:

Process of determining optimal hip implant surface topography in order to achieve lowest possible shear stress during everyday activities requires large number of models to be created and analyzed. During that process different model parameters are varied in order to better understand how they affect shear stress values and distributions. Depending on the complexity of the model and the number of elements for the finite element simulation, the time needed to obtain the results can vary from few minutes to few hours. Ten model parameters related to surface topography information were considered. It is not feasible to analyze all parameters variations which means that new approaches to problem analysis should be considered. A possible way to optimize the surface topographies analysis is to perform feature selection as a way to determine the most important parameters. In that way, we are possible to reduce the number of numerical models that must be created and analyzed. The aim of this study was to perform feature selection between 11 considered model parameters.

Key words: feature selection, hip implant, surface topographies

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