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EDITORIAL

Applied Mathematics and Mechanical Engineering Problems

There are many joint problems between applied mathematics and mechanical engineering. Such problems are very important for development of both experimental and theoretical studies. For example, Fluid flow problems such as boundary layer flow, bio-fluids and turbulent flow are important for various engineering applications. Such problems are studied by many ways such as analytical or numerical solutions of the Navier-Stokes equation. Dealing with the large data that obtained by the numerical simulations needs to be filtered and analyzed by different filtering techniques. Now, Filtering techniques that are used in image processing problems are considered as efficient techniques for several fluid flow problems. Many research efforts for extraction and filtering of the flow fields are carried out and the results show high ability to extract important characteristics of the flow fields. However, more efforts are required to achieve better understanding for the universal characteristics of the fluid flow problems. Also, analytical solutions to continuum mechanics and elasticity problems are very important as well as their numerical solutions. Investigation of those studies with their applications to real world life problem help in understanding and developing theoretical as well as empirical techniques.

Specific topics of interest include (but are not limited to):

1. Turbulent and boundary layer flow problems.

2. Analytical and numerical solutions to the Navier-Stokes and Boltzmann equations.

3. Fourier decomposition and wavelet filtering.

4. Partial differential equations filtering methods.

5. Harmonic filtering methods.

6. New filtering methods.

7. Visualization techniques for signal processing and turbulent flow.

8. Reduce the time consuming for filtering and enhancement processes.

9. Connection between image processing and fluids flow problems via filtering techniques.

10. Numerical solutions to elasticity and continuum mechanics problems.

11. New analytical techniques to solve continuum mechanics and elasticity equations.

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