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Biofouling buildup on submerged structures is a major problem that affects the surface material of the structure, eventual hydrodynamic quality of the surface, and in some cases the efficacy of cooling systems. Underwater cleaning is a solution to maintain submerged structures in order to assure proper functioning for as long as possible.

This thesis presents a new concept of a flexible crawling mechanism for an industrial underwater cleaning robot. The main research questions are about how to select the most important features in choosing the platform mechanism to fulfil the surface scanning operation, how to design the platform in order to bear the forces related to the cleaning task, and how to maintain surface contact throughout cleaning by determining the significant parameters to be monitored in order to ensure the stability on the surface during the cleaning process.

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