# VIRTUAL DESIGN OF MULTI-AXIS POSITIONING FOR ROBOTIC APPLICATION 

WAN MUHD ZULHASIFI BIN W. AB. RAHIM

Report submitted in partial fulfillment of the requirements for award of the degree of Bachelor of Mechanical Engineering

Faculty of Mechanical Engineering UNIVERSITI MALAYSIA PAHANG

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## SUPERVISOR'S DECLARATION

We hereby declare that we have checked this project and in our opinion this project is satisfactory in terms of scope and quality for the award of the degree of Bachelor of Mechanical Engineering.

Signature


Name of Supervisor: Dr. Daw Whet Whet Mon

| Position | $:$ Lecturer |
| :--- | :--- |
| Date | $: 6$ November 2008 |

Signature
Name of Panel


Position : Lecturer
mr. Semin

Date $\quad: 6$ November 2008

## STUDENT'S DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree.

Signature


Name: WAN MUlti ZULHASIFI W. AB. RAHIM
ID Number: MAO G104
Date: 6 NOVEMBER 2008

For my beloved parent, sisters and brother, thanks a tot for yeur tolerance, love and encouragement...

For my dearest friends and course-mates,
thanks a lot for supporting me for this time...
"Life is meaningless without you all..."

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## LIST OF SYMBOLS

L Langrangian term
T Total kinetic energy
$\rho \quad$ Mass density
$\dot{u}, \dot{v}, \dot{w} \quad$ Velocity component
$\mathrm{u}, \mathrm{v}, \mathrm{w} \quad$ Displacement component
P Total number of DOFs
q Nodal velocity

## LIST OF ABBREVIATIONS

| DOF | Degree-of-freedom |
| :--- | :--- |
| FE | Finite element |
| LCD | Light Crystal Display |
| CAD | Computer Aided Design |
| MES | Mechanical Event Simulation |
| FEM | Finite Element Method |

