APSC496

Project Report

**Praxim Surgical Robot**

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# Abstract (NICHOLAS)

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# Introduction (NICHOLAS)

* General overview of project and how it came to be – include Nikolai and MECH 457 2008
* List different parties involved – Chris (praxim), Tony (UBC), Team
* Arthroplasty surgery background and value product brings to patients and surgeons

# Project Background (NICHOLAS)

* Introduction to haptic surface emulation and potential use
* Brief review of existing technologies (not as long as benchmarking)
* More complete review of PREVIOUS MECH 457 Prototype
* Highlight failures of existing devices, specifically MECH 457

# Project Scope (NICHOLAS)

* Relate failures of other devices to the objectives/scope of current project – general final state to where the project will get to (Device suitable for Cadaver testing of parameters related to performance and to user interface).
* Design objectives: List of specific evaluation criteria and requirements (cleanable, total error, user feel….)

# Work Completed

* Overview of structure of focus and areas that will be presented in document

## 4.1 Mechanism Analysis and Selection (?)

* Diagrams of mechanisms reviewed
* stand out features of each design
* brief description of methods used to evaluate each design
* single table summarizing results

## 4.2 Hard surface implementation (NICHOLAS?)

* Overview of passive hard surface implementation methods (not entirely sure where to put this as seems suited to objectives section – perhaps do not include at all?)

## 4.3 General size and weight optimization (IBRAHIM)

* Include analysis completed for TAR comparing operating envelop size and predicted weight of the device.

## 4.4 Gravity Compensation (NICHOLAS)

* Include analysis completed for TAR that focuses on the need for gravity compensation and discusses the selection design technique

## 4.5 Joint Design (DAVE)

* Overview of joint design
* Specifics of Bearing and encoder selection/design WRT to overall size of device.
* Specifics relating to looseness
* Specifics relating to manufacturing

## 4.6 Error Minimization (IBRAHIM & DAVY)

* Mechanical hardware selection
* Electrical hardware selection
* Software design

# Conclusions

* General statement

## 5.1 Testing (ERICA)

* Brief description of testing produce
* Relate to design objectives and requirements

## 5.2 Results (TEAM)

* Not sure what will be said yet

# Recommendations (?)

Not sure what will be said yet

**6.0 References and Appendices**

**6.1 References**

1. Mech451/2 Praxim Project Final Report, 2008

2. Haptic Emulation of Hard Surfaces with Applications to Orthopaedic Surgery, Nikolai Hungr, 2008

**6.2 Appendix A - Gantt Chart**

