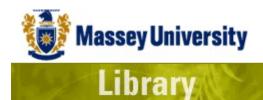


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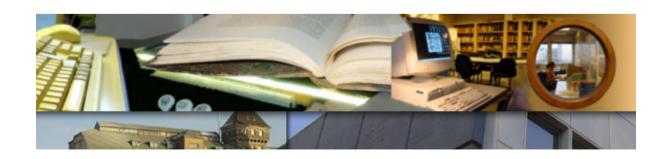


















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High-Performance Visual Closed-Loop Robot Control

Corke, Dr Peter I (1994) High-Performance Visual Closed-Loop Robot Control. PhD thesis, Mechanical and Manufacturing Engineering, University of Melbourne.

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Abstract

This thesis addresses the use of monocular eye-in-hand machine vision to control the position of a robot manipulator for dynamically challenging tasks. Such tasks are defined as those where the robot motion required approaches or exceeds the performance limits stated by the manufacturer.

Computer vision systems have been used for robot control for over two decades now, but have rarely been used for high-performance visual closed-loop control. This has largely been due to technological limitations in image processing, but since the mid 1980s advances have made it feasible to apply computer vision techniques at a sufficiently high rate to guide a robot or close a feedback control loop. Visual servoing is the use of computer vision for closed-loop control of a robot manipulator, and has the potential to solve a number of problems that currently limit the potential of robots in industry and advanced applications.

This thesis introduces a distinction between visual kinematic and visual dynamic control. The former is well addressed in the literature and is concerned with how the manipulator should move in response to perceived visual features. The latter is concerned with dynamic effects due to the manipulator and machine vision sensor which limit performance and must be explicitly addressed in order to achieve high-performance control. This is the principle focus of the thesis.

In order to achieve high-performance it is necessary to have accurate models of the system to be controlled (the robot) and the sensor (the camera and vision system). Despite the long history of research in these areas individually, and combined in visual servoing, it is apparent that many issues have not been addressed in sufficient depth, and that much of the relevant information is spread through a very diverse literature. Another contribution of this thesis is to draw together this disparate information and present it in a systematic and consistent manner. This thesis also has a strong theme of experimentation. Experiments are used to develop realistic model which are used for controller synthesis, and these controllers are then verified experimentally.

Keywords: robotics, computer vision, visual servoing, control

Subjects: Engineering > Department of Mechanical and Manufacturing Engineering

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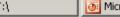


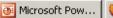




























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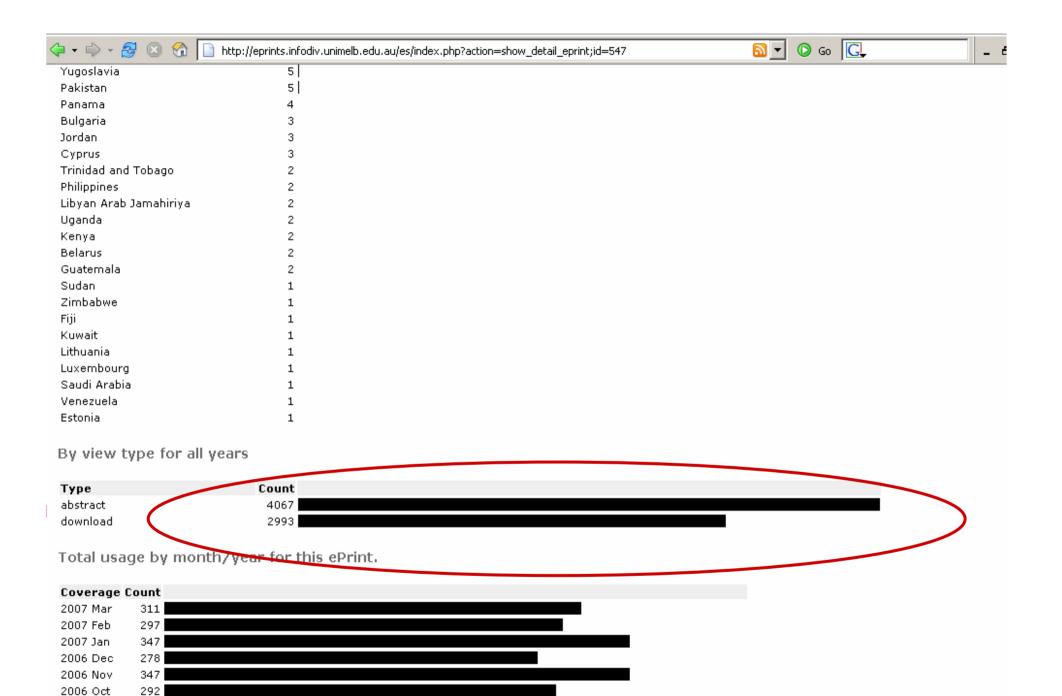
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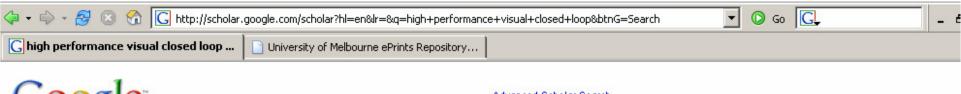
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PI Corke - IEEE Trans. Robotics and Automation, 1996 - cat.csiro.au

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PI Corke, MC Good - Robotics and Automation, IEEE Transactions on, 1996 - ieeexplore.ieee.org

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to achieving high-performance closed-loop visual control. A ...

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B Yao, M Al-Majed, M Tomizuka - Mechatronics, IEEE/ASME Transactions on, 1997 - ieeexplore.ieee.org

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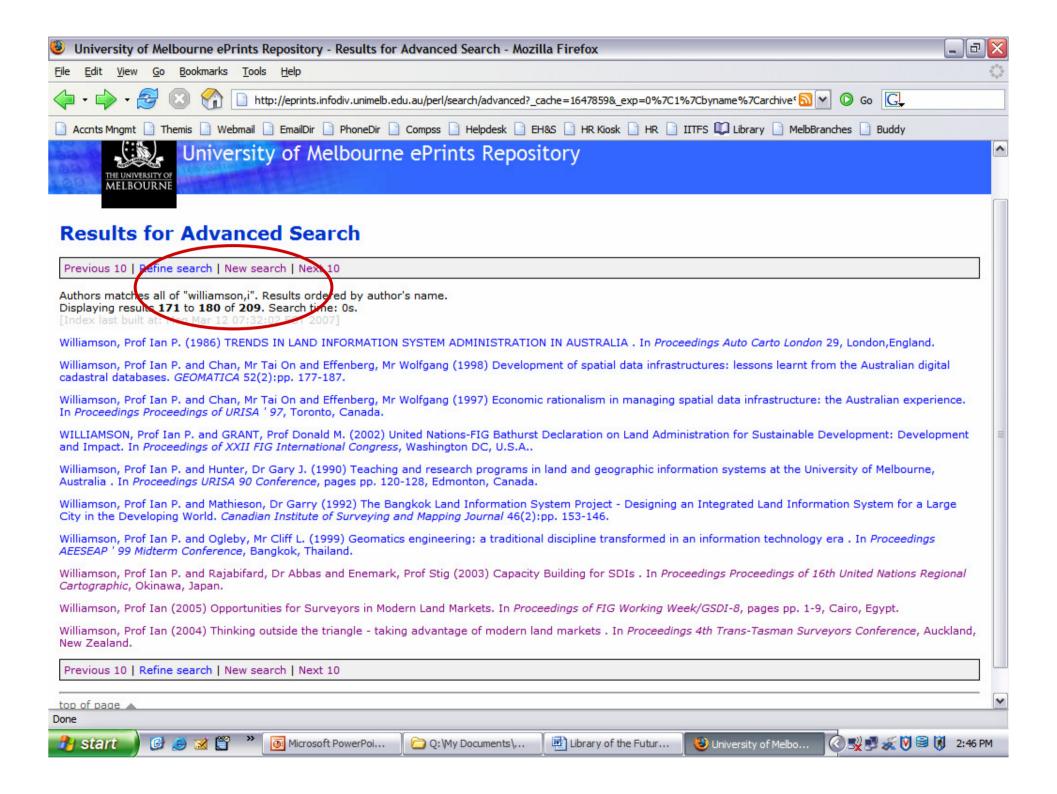
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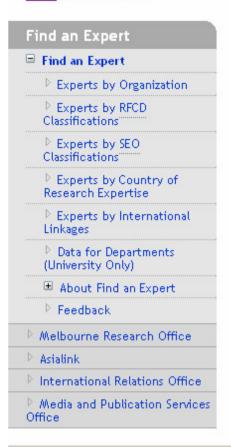
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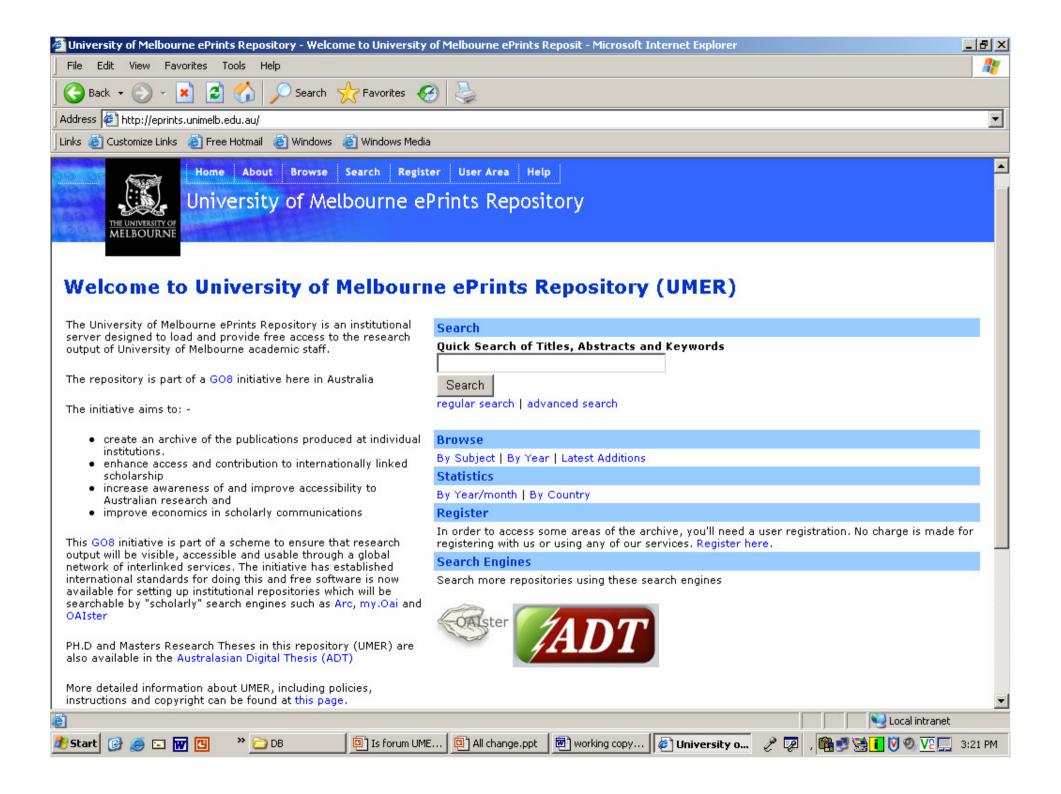
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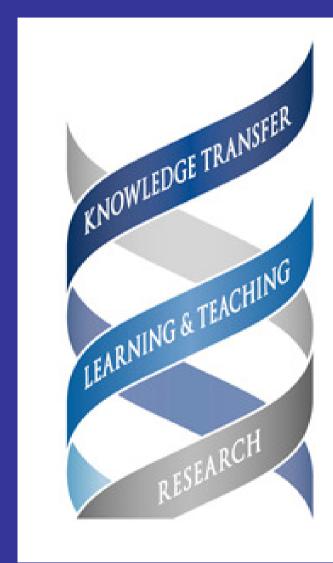
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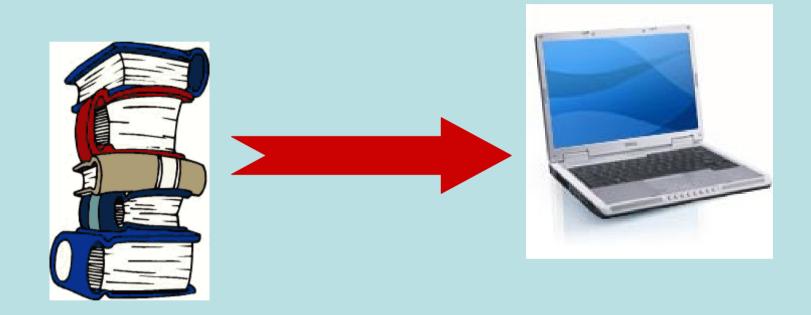


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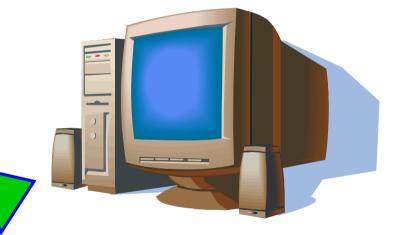
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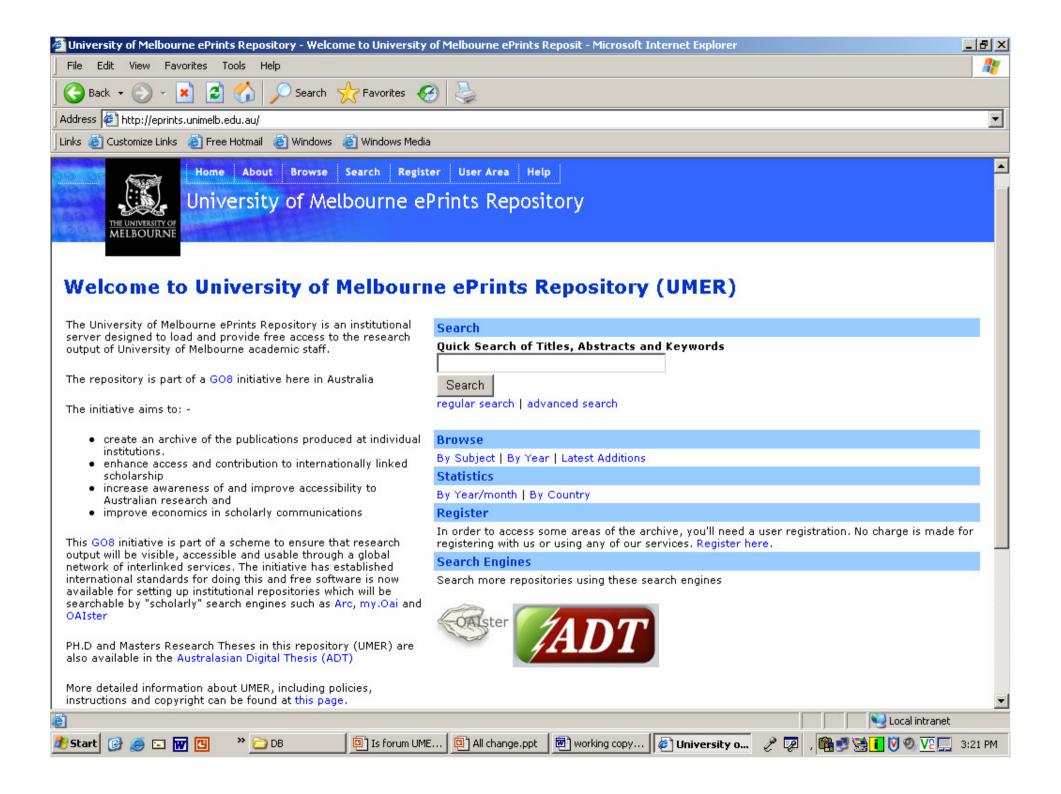
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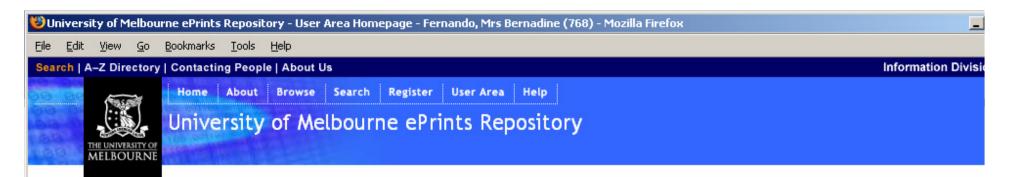
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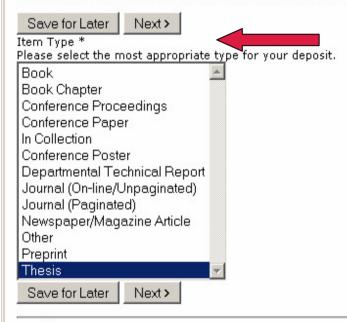
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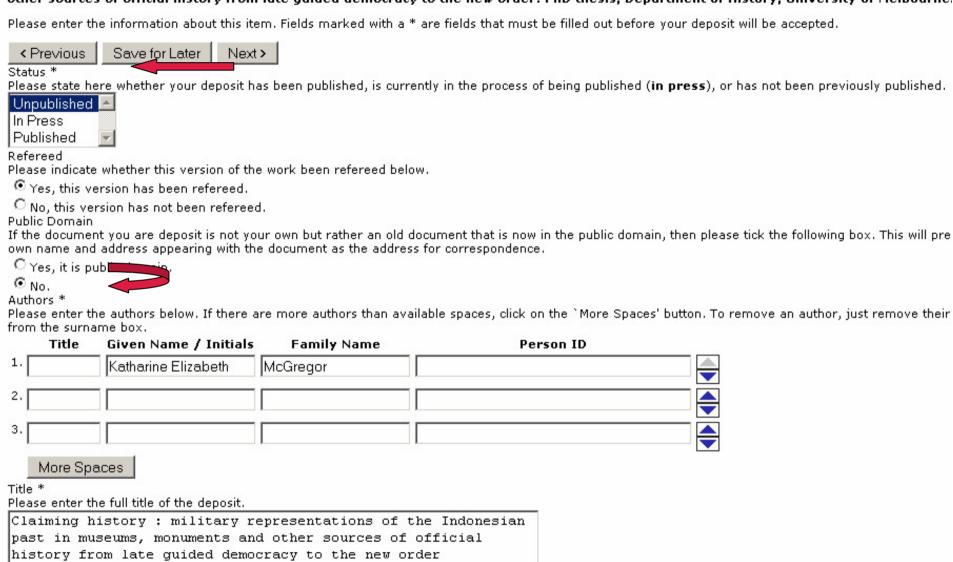


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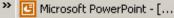


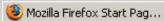


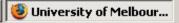




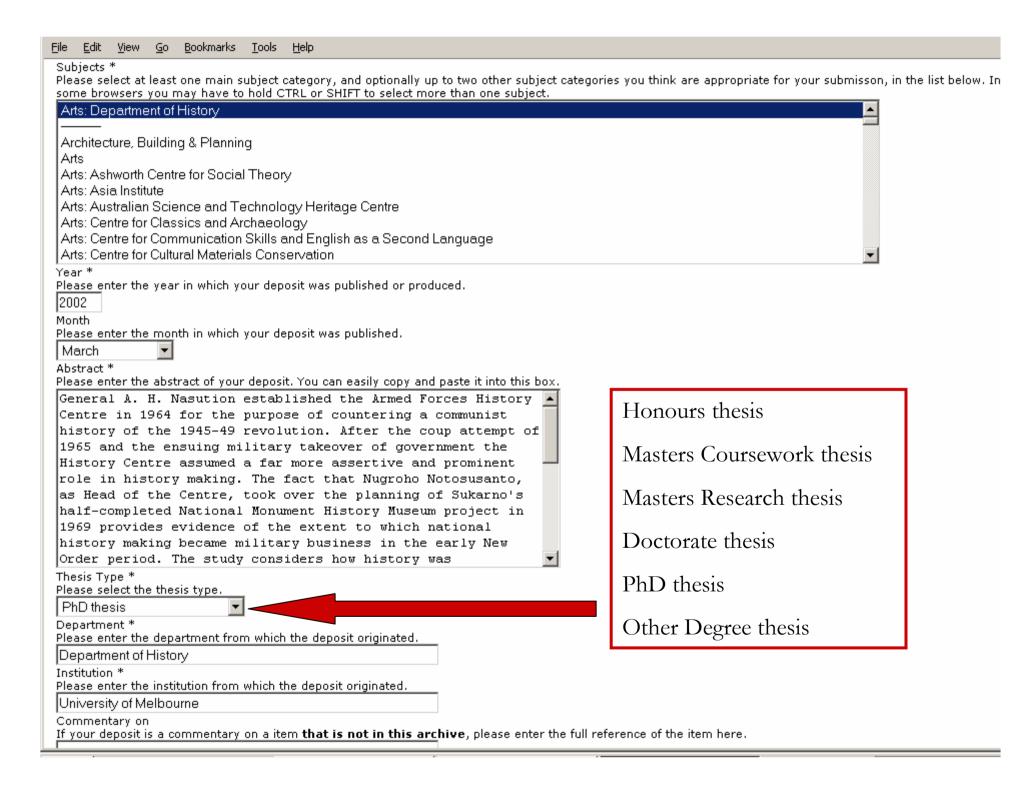












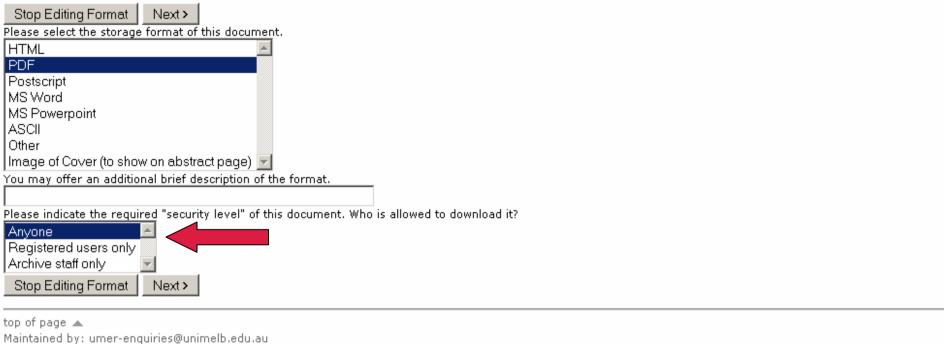
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Abstract

General A. H. Nasution established the Armed Forces History Centre in 1964 for the purpose of countering a communist history of the 1945-49 revolution. After the coup attempt of 1965 and the ensuing military takeover of government the History Centre assumed a far more assertive and prominent role in history making. The fact that Nugroho Notosusanto, as Head of the Centre, took over the planning of Sukarno's half-completed National Monument History Museum project in 1969 provides evidence of the extent to which national history making became military business in the early New Order period. The study considers how history was represented in the projects of the Centre from its inception in 1964 to its last museum project in 1993. It traces how the military used history from the early years of the New Order to legitimize the overthrow of the

Sukmo regime, to justify the killing of perhaps 500,000 alleged communists, to strengthen military unity and to legitimize the military's political role and the suppression of regime dissent. Where possible this study compares military representations of the Indonesian past with earlier representations of the past, especially Sukamoist interpretations of the past made in the leftist Guided Democracy period. In doing so the thesis examines how the national myth and related constructions of national identity were transformed by the military-dominated New Order regime.

Keywords: Military museums - Indonesia, Indonesia - History,

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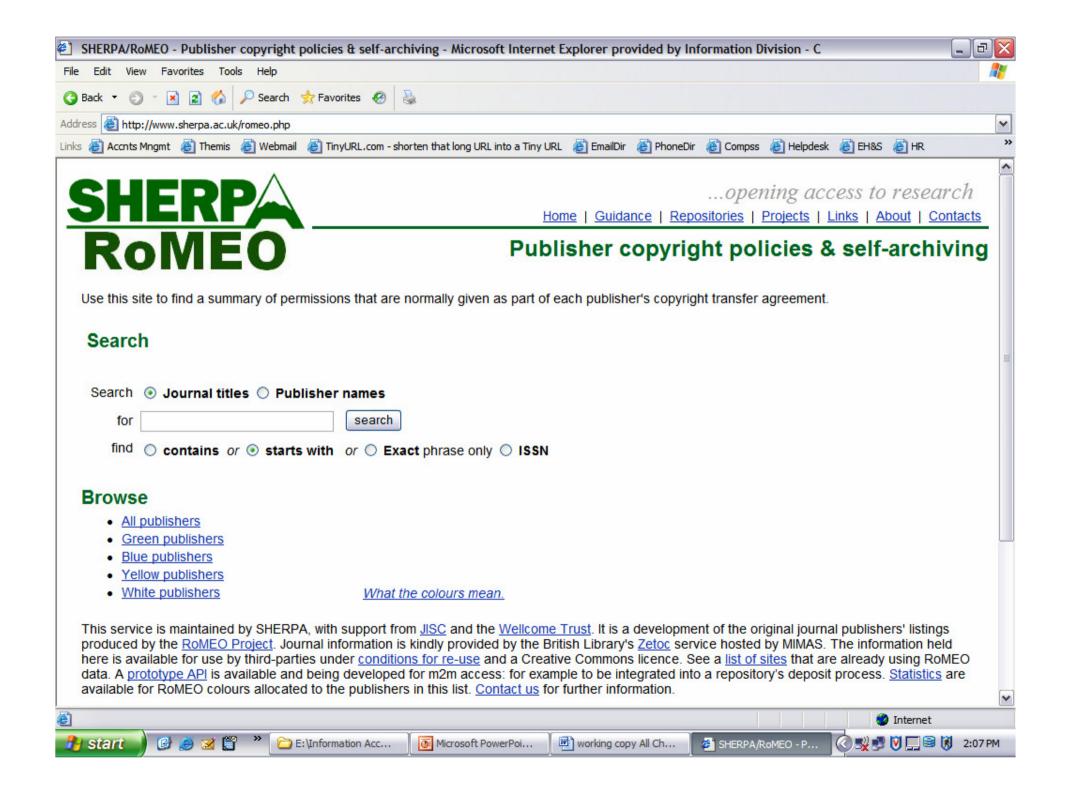
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