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Nielsen, Lars

1985

Document Version:
Publisher's PDF, also known as Version of record

CODEN: LUTFD2/(TFRT-7292)/1-3/(1985)

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Lars Nielsen

Department of Automatic Control
Lund Institute of Technology

September 1985

LUND INSTITUTE OF TECHNOLOGY
DEPARTMENT OF AUTOMATIC CONTROL
Box 725
S 220 07 Lund 7 Sweden

Document name
Report

Date of issue
September 1985

Document number
CODEN:LUTFD2/(TFRT-7292)/1-3/(1985)

Author(s)
Lars Nielsen

Supervisor

Sponsoring organization
STU

Title and subtitle

Documentation of some image programs.

Abstract

Documentation of five image programs, where to find them, and where to find further information.

Key words

Classification system and/or index terms (if any)

Supplementary bibliographical information

ISSN and key title

ISBN

Language
English

Number of pages
3

Recipient's notes

Security classification

Distribution: The report may be ordered from the Department of Automatic Control or borrowed through the University Library 2, Box 1010, S-221 03 Lund, Sweden, Telex: 33248 lubbis lund.

Documentation of some image programs

Lars Nielsen

Information will be given on five image programs, where to find them, and where to find further information.

1. Demo

The basic hardware and software of the image lab are described in Chapter 2 and Appendix A of my thesis. The directory [larsn.user] contains all package-files and the command-file needed for demo.pak (pp. 27-31). The code is together with my thesis self explaining. Modifying demo.pak is the simplest way to start working with the image system.

2. Turtle

The ideas of the Turtle program is described in Chapter 3 and Appendix B of my thesis. It is based on the Master thesis by Kenneth Johansson TFRT-5307, which contain flow charts of some of the basic algorithms. The Turtle electronics is described in the Master thesis by Sandin and Wullt TFRT-5271. The directories [larsn.demo] and [larsn.inout] contain the files needed. Calling the command file by @[larsn.demo]robot results in scr:[larsn.demo]robot.exe. Anders Wallenborg and Bengt Mårtensson have demonstrated the program.

3. Frog

The frog-program is an interactive system for working with time sequences of images. It is described in the Master thesis by Sven-Olof Jansson TFRT-5327. The report contains a good documentation, including ideas, structure, database, and package specifications. The directory [larsn.frog] with sub-directories contain the code, which is well structured and readable. The command file [larsn.frog.com]frogprog results in scr:[larsn.frog]frogprog.exe. The mouse is handled by a separate process, adproc2. The command-file [larsn.frog.com]frogcom starts both frogprog and adproc2.

4. Impac

Impac is a stack-machine for images working like a HP-calculator. The top of the stack is seen on the monitor. Operations on the image are selected by commands. The program is written by Lars Rundqwist. The directory [larsn.impac.user] contains a version. The basic packages are there separately compiled and available in impacbas.obj. The source code to generate impacbas.obj is in the directory [larsn.impac].

Impac is the best way to start working with the image system. Impac in [larsn.impac.user] contains stack handling, window management, color look-up table commands, grab and freeze of video input, save to and load from file, and a print command. There are, however, only few image operations. The Master thesis by Ola Dahl TFRT-5328 is a good example of how it can be extended with several more image operations. How to do it is described later.

5. Imaging

Equations of perspective imaging are given in Chapter 5 of my thesis. MACSYMA macros for eqs (5.1-5.20) are available in [larsn.macsyma.imaging]. Different objects can be defined e.g. as in the files triangles. and squares. . Imaging is performed by the file imaging. which in turn uses the file rotate. . Properties of the image can be computed e.g. as in the files areas. and perimeter. . A session is presented in Appendix C of my thesis.

Operation

The different programs need different connections to external equipment for operation

1. demo

Video connection: Camera 1 and sync. (Ask Ola).

2. Turtle

Video connection: Camera 1 and sync. (Ask Ola).
The mouse and the joy sticks (i.e. DRV-11 card on the Vax) must be connected (Ask Leif).
The Turtle must be connected. Control signals (logical input and output) as in Sandin and Wullt, and Kenneth Johansson, which is the normal case. There must also be an external power supply, Sandin and Wullt (Ask Rolf B).

3. Frog

Video connection: Selectable between Camera 1 and sync. or Camera 2 and no sync. (Ask Ola).
The mouse (i.e. DRV-11 card on the Vax) must be connected (Ask Leif).

4. Impac

Video connection: Selectable between Camera 1 and sync. or Camera 2 and no sync. (Ask Ola).

Make your own Impac

1. Copy all files on [larsn.impac.user]

2. Change the definition of pakdir on line 6 in impac.com.

You may now compile and link using impac.com. Take a list of InterPr.pak containing the commands and try them.

If you wish to add operations then:

3. Write a new procedure in PixelOper.pak. Copy the examples there.

4. Introduce a new command in InterPr.pak. The command should be introduced in the type commands, the variable comstring, and the final case statement. You may also write an intermediary procedure to e.g. test the arguments, see the different cProcedures.

On points 3 and 4 ask Ola or Lars R.