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89

Computer Aided Design Modelling, Systems Engineering, CAD-Systems

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Edited by J. Encarnacao



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INTRODUCTION

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Introduction

This Advanced Course on Computer Aided Design, held at the Technical University of Darmstadt from September 8th to 19th 1980, is financed by the Ministry for Research and Technology of the Federal Republic of Germany and by the Commission of the European Communities.

The lecturers of this Advanced Course are the internationally well-known technical experts on the area of CAD:

K. Bo, University of Trondheim, Trondheim, Norway
T. Neumann, Technical University of Darmstadt, Darmstadt, Germany
H. Nowacki, Technical University of Berlin, Berlin, Germany
A. Requicha, University of Rochester, Rochester, N.Y., USA
T. Sancha, Cambridge Interactive Systems, Cambridge, U.K.
E.G. Schlechtendahl, Kernforschungszentrum Karlsruhe, Germany
H. Tucker, CAD Center, Technical University of Denmark, Lyngby, DK
M.A. Wesley, IBM Watson Research Center, Yorktown Heights, USA

We would like to thank all the lecturers for their contributions to the Advanced Course, and especially H. Tucker who kindly agreed to participate at very short notice.

The Course addresses the following topics:

Scope and purpose of CAD CAD system architecture Design of CAD systems Design optimisation in CAD Aspects of CAD methodology The resource aspect in CAD systems Graphics for presentation of data Geometric modelling 3 D-Graphics Surface generation and fairing Data base design for CAD Case studies Ergonomics Economics

The objective is to have these topics presented by outstanding technical experts; these lecturers are supposed to prepare for the course a set of lecture notes. These lecture notes, as a whole, should - in a first approach - serve as some sort of a CAD text book. A Lecturers' Seminar took place in March 1980 in Seeheim in order

- to discuss and agree on the topics and contents of all lectures and
- to decide upon some common terminology and common understanding of the technical objectives for the course and for the course proceedings.

The result of this coordination seminar was to structure the content of the course in

> I Modelling in CAD (Requicha, Wesley, Nowacki)
> II CAD System Engineering (Bø, Neumann, Schlechtendahl)
> III CAD Systems - Architecture, Design, Justification -(Bø, Sancha, Tucker, Schlechtendahl)

The first part is concerned with the problems of object representation, geometric models, curves, surfaces and the modelling of design decisions for CAD. In this part the fundamental methods and algorithms are presented, which can be seen as a design methodology for CAD applications. The second part discusses different functions of a CAD system (data base, graphics, man-machine interaction) from a system engineering point of view. The last part presents the CAD system aspect, including application system architectures and CAD system justification.

It was decided in Seeheim to have July 1st as the deadline for the lecture notes (camera ready). All lecturers, but one, have accomphlished with this deadline. It is their merit, that it was possible to have the course proceedings printed before the beginning of the course. We would like to express our sincere gratitude to all lecturers for their fantastic spirit of cooperation and for the high level standard of the lecture notes they produced.

No Advanced Course like this one, can be organized without assistance. Mrs. Deubner, Frenk and Kalbfuß were a great help in all organizational

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matters; Mrs. R. Kimeswenger was always a safe and efficient support in all secretarial aspects. Last not least, the editor would like to express his gratitude and appreciation to his associates

Norbert Baron and

Walter Klos

for their advice and invaluable assistance in preparing, organizing and running this Advanced Course.

Darmstadt, July 1980

J. Encarnacao

CONTENTS

INTRODU	CTION (Encarnacao)	
PART I	MODELLING IN CAD	1
<u>1. Rep</u>	resentation of Rigid Solid Objects (Requicha)	2
1.1	Introduction	3
1.2	Characterization of Representation Schemes	6
	1.2.1 Definitions	6
	1.2.2 A Methodology for Defining Specific Representation Schemes	9
	1.2.3 Examples	12
	1.2.4 Formal Properties of Representation Schemes	15
	1.2.5 Informal Properties of Representation Schemes	21
·	1.2.6 Multiple Representations: Consistency, Equivalence and Conversion	24
	1.2.7 Representation Hierarchies	29
1.3	Survey of Representation Schemes for Rigid Solids	30
	1.3.1 Preview	30
	1.3.2 Ambiguous Representations	32
	1.3.3 Pure Primitive Instancing Schemes	35
	1.3.4 Spatial Occupancy Enumeration	37
	1.3.5 Cell Decompositions	39
	1.3.6 Constructive Solid Geometry	41
	1.3.7 Sweep Representations	52
	1.3.8 Boundary Representations	58
	1.3.9 Hybrid Schemes	69
	1.3.10 Conversion between Representations	70
1.4	Summary and Conclusions	72
2. Con:	<u>struction and Use of Geometric Models</u> (Wesley)	79
2.1	Introduction	80
2.2	The Design Process	81
	2.2.1 The Data Base	82

	2.2.2 Construction of Geometric Models	88
2.3	The Design Analysis Process	104
	2.3.1 Basic Engineering Properties	106

	2.3.2 Finite Methods for Higher Level	
	Engineering Properties	
,	2.3.3 Design validation	
	2.).4 Simulation of Mechanisms	
2.4	The Graphic Documentation Process	
2.5	The Manufacturing Process	
	2.5.1 Cutting Process	
	2.5.2 Forming processes	
	2.5.3 Joining Processes	
2.6	The Assembly Process	
	2.6.1 Off-line Programming of Industrial Robots	
	2.6.2 Model Driven Industrial Vision	
2.7	Product Test	
2.8	Conclusions	
2.9	Acknowledgements	
2.10	References	
3. Curv	e and Surface Generation and Fairing (Nowacki)	
<u>3. Curv</u> 3.1	e and Surface Generation and Fairing (Nowacki) Introduction	
<u>3. Curv</u> 3.1 3.2	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations	
<u>3. Curv</u> 3.1 3.2 3.3	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation	
<u>3. Curv</u> 3.1 3.2 3.3	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation 3.3.1 Curves	
<u>3. Curv</u> 3.1 3.2 3.3	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation 3.3.1 Curves 3.3.2 Surfaces	
<u>3. Curv</u> 3.1 3.2 3.3 3.4	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation 3.3.1 Curves 3.3.2 Surfaces Fairing Principles	
<u>3. Curv</u> 3.1 3.2 3.3 3.4	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation 3.3.1 Curves 3.3.2 Surfaces Fairing Principles 3.4.1 Curves	
<u>3. Curv</u> 3.1 3.2 3.3 3.4	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation 3.3.1 Curves 3.3.2 Surfaces Fairing Principles 3.4.1 Curves 3.4.2 Surfaces	
<u>3. Curv</u> 3.1 3.2 3.3 3.4	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation 3.3.1 Curves 3.3.2 Surfaces Fairing Principles 3.4.1 Curves 3.4.2 Surfaces 3.4.3 Interactive Fairing	
3. Curv 3.1 3.2 3.3 3.4 <u>4. Mode</u>	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation 3.3.1 Curves 3.3.2 Surfaces Fairing Principles 3.4.1 Curves 3.4.2 Surfaces 3.4.3 Interactive Fairing <u>lling of Design Decisions for CAD</u> (Nowacki)	
<u>3. Curv</u> 3.1 3.2 3.3 3.4 <u>4. Mode</u> 4.1	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation 3.3.1 Curves 3.3.2 Surfaces Fairing Principles 3.4.1 Curves 3.4.2 Surfaces 3.4.3 Interactive Fairing <u>lling of Design Decisions for CAD</u> (Nowacki) Introduction	
<u>3. Curv</u> 3.1 3.2 3.3 3.4 <u>4. Mode</u> 4.1 4.2	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation 3.3.1 Curves 3.3.2 Surfaces Fairing Principles 3.4.1 Curves 3.4.2 Surfaces 3.4.3 Interactive Fairing <u>lling of Design Decisions for CAD</u> (Nowacki) Introduction Modelling of Design as Optimization	
<u>3. Curv</u> 3.1 3.2 3.3 3.4 <u>4. Mode</u> 4.1 4.2 4.3	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation 3.3.1 Curves 3.3.2 Surfaces Fairing Principles 3.4.1 Curves 3.4.2 Surfaces 3.4.3 Interactive Fairing <u>lling of Design Decisions for CAD</u> (Nowacki) Introduction Modelling of Design as Optimization Overview of Optimization Methods	
<u>3. Curv</u> 3.1 3.2 3.3 3.4 <u>4. Mode</u> 4.1 4.2 4.3	e and Surface Generation and Fairing (Nowacki) Introduction Problem Formulations Form Generation 3.3.1 Curves 3.3.2 Surfaces Fairing Principles 3.4.1 Curves 3.4.2 Surfaces 3.4.3 Interactive Fairing <u>lling of Design Decisions for CAD</u> (Nowacki) Introduction Modelling of Design as Optimization Overview of Optimization Methods 4.3.1 Classification of Problem Types	

			PAGE
	4.4	Application of Optimization in CAD	211
	4.5	Interactive Optimum Design	213
	4.6	A Design Optimization Session	214
PAR	TI	CAD SYSTEM ENGINEERING	225
5.	Dat	a Base Design (Bo)	226
	5.1	Introduction	227
	5.2	Retrospective Glance	229
	5.3	Logical and Physical Data Base Design	235
		5.3.1 The Four-Level Model	236
		5.3.2 The Entity/Relationship Design Method	230
	5.4	Data Base Structures	244
		5.4.1 Hierarchical Structure	244
		5.4.2 Network Structure	245
		5.4.5 Kelational Structure	240
	5.5	Design and Implementation of Data Bases	248
	5.6	Conclusion	254
	5.7	Future Trends	258
		5.7.1 Data Base Machines	258
		5.7.2 Integrated DBMS and Telecommunication	259
		5.7.3 Distributed Data Bases	260
6.	CAD	Data Base Requirements and Architectures (Neumann)	262
	6.1	Components of a CAD System	263
	6.2	The Data Base Management System	264
		6.2 1 The Responsibilities of a DBMS	264
		6.2.2 Levels of Abstractions in a DBMS	265
		6.2.3 Data Independence	265
		6.2.4 Different Interfaces of a DBMS	266
	6.3	Information Modelling	266
		6.3.1 Entity - Relationship Model	266
	6.4	Data Models	269
		6.4.1 The Relational Model	269

			PAGE
		6.4.2 The Network Data Model	271
		6.4.3 The Hierarchical Model	272
	6.5	Data Manipulation Languages	273
		6.5.1 The DBTG Proposal	274
		6.5.2 Data Languages for the Relational Model	274
	6.6	Focusing on CAD Applications	281
		6.6.1 Properties of CAD Information	281
		6.6.2 The User	281
		6.6.3. The Design Process	282
		6.6.4 Graphical Structures in a Relational Data Model	282
	6.7	The Storage Structures	283
		6.7.1 Storage Representation of Relations	284
		6.7.2 Access Pass Structures	284
		6.7.3 Performance Tuning	285
	6.8	The Query Evaluation	285
	6.9	Data Consistency	286
		6.9.1 Problems Due To Concurrency	287
		6.9.2 Lock Granularity	288
	6.10	O Recovery Management	289
7.	Haro	iware for Computer Graphics and	
- لر	Com	puter Aided Design (Bo)	293
	7.1	Introduction	294
	7.2	Classification	295
		7.2.1 Line Drawing Versus Raster	296
		7.2.2 General Comparison of Raster and Vector Graphics	297
	7.3	Random Positioning Devices	298
		7.3.1 Rands Positioning Displays	298
		7.3.2 Random Positioning Plotters	302
	7.4	Raster Graphics Devices	308
		7.4.1 Raster Displays	308
		7.4.2 Raster Plotters	313

		PAGE
	7.5 Input Devices	318
	7.5.1 Light Pen	318
	7.5.2 Tablet	319
	7.5.3 Joystick	320
	7.5.4 Function Buttons	320
	7.5.5 Keyboard	320
	7.6 Configuration of Graphics Hardware	322
	7.6.1 Simple Configuration	322
	7.6.2 Workstation Configuration	322
	7.6.3 Growing Graphics Configuration	323
8.	Basic Graphics for Data Representation (Schlechtendahl)	329
	8.1 Graphical Kernel System	330
	8.1.1 Purpose of Graphic Kernel Systems	330
	8.1.2 The Graphical Kernel System GKS	330
	8.1.3 Significant Differences between GKS and the CORE System	331
	8.2 Data Presentation Techniques	331
	8,2.1 Introduction	331
	8.2.2 Functions of one Variable	333
	8.2.3 Functions of two Variables	335
	8.2.4 Functions of more Variables	340
	8.2.5 Graphical Editing	341
	8.3 References	342
9.	Utilization of Graphics Resources (Bo)	
<u>, </u>	(Merged into Chapter 7)	
<u>10.</u>	Man Machine Interaction (Bo)	346
	10.1 Introduction	347
	10.2 Classification of interaction	349
	10.3 Data Capturing of Available Data	352
	10.3.1 Digitizing	353
	10.3.2 Automatic Data Input	354
	10.4 Direct Input of Created Data	359

		PAGE
	10.4.1 Handwritten Input	359
	10.5 Man/Machine Dialogue	363
	10.5.1 Command Language	367
	10.6 Computer Graphics	372
	10.6.1 Classification	373
	10.6.2 Graphics Standardization 10.6.3 Increasing Capabilities	374 375
	10.7 Voice Input/Output	378
	10.7.1 Voice Recognition	378
	10.7.2 Voice Synthesizing	379
	10.7.3 Natural Language	379
	10.8 The Time-factor	381
	10.9 Bulk Output	382
	10.10 Artificial Intelligence in Interaction	384
	10.11 Future Work Stations	385
PART	III CAD SYSTEMS	
	- Architecture, Design, Justification -	387
<u>11.</u>	CAD Process and System Design (Schlechtendahl)	388
	11.1 CAD Process	390
	11.1.1 Design as a Process	390
	11.1.2 Man-Machine Cooperation	391
	11.1.3 The Design Environment	393
	11.2 The Resource Aspect in CAD	397
	11.2.1 Resource Availability and Conflicts of Resource Requirements	397
	11.2.2 Resources and Efficiency	399
	11.3 Tools for CAD Design and Implementation	400
	11.3.1 Tools for CAD System Application	400
	11.3.2 Tools for CAD System Development	401
	11.3.3 The Concept of a CAD System Nucleus	401
	11.4 CAD Schema Planning	404
	11.4.1 A Sample Problem	404

	PAGE
11.4.2 Naming of Entities	406
11.4.3 Alternative Schemas	406
11.4.4 Subschema Transformations	408
11.4.5 Flexibility versus Efficiency, a Measure of Prudence	412
11.5 Implementation of a Scheme in a Programming Language	412
11.5.1 Mapping	412
11.5.2 Binding	414
11.5.3 Algorithmic Modelling	417
11.6 Software Machine Design	418
11.6.1 Basic Considerations	419
11.6.2 The Abstract Machine	420
11.6.3 Process State Representation	421
11.6.4 The Concrete Machine	422
11.6.5 Resource Management Strategies	423
11.6.6 The Components of a Software Machine	424
11.7 References	425
12. Infrastructure Approach to Integrated CAD Systems	430
(Tucker)	h z a
12.1 Introduction	451
12.2 The User Interlate	4 5 エ ルマ つ
12.) The Oser Model	472
12.5 The Design Process	4 2 2 カスカ
12 6 The Designer's Tools	4)4 1131
	- L -
12.6.1 Justification Analysis	436
12.6.2 Task Analysis	437
12.0.5 Evaluations Techniques	439
12.0.4 Documents as Design Tools	440
12.6.5 Design Capability	441
12.0.0 User Critique	441
12.0.7 Software Tools	442
12.7 Summary	443

<u>13.</u>	Choice of Turnkey Systems (Bo)	445
	13.1 Introduction	446
	13.2 CAD Task Force	447
	13.3 The Turnkey Vendors	449
	13.4 Selection Criterias	454
	13.5 Hidden Cost and Benefits	457
	13.6 Conclusion	459
14.	Application System Architecture (Sancha) *	

15. System Justification and Case Studies (Sancha)*

Authors' Addresses

* This chapter did not arrive in time for printing. 461

PAGE