<table>
<tr><td>Course Title:</td><td colspan="3">Practice Digital Signal Processors</td><td colspan="2">Year of Study:</td><td>4</td></tr>
<tr><td>Objective of the course:</td><td colspan="6">Introduction to practical implementation of digital controllers on DSP platforms. Review of hardware and software aspects.
DSP programming in assembly language. C compilers for DSP platforms. Accessing Harvard architecture resources from C. The use of code generators and simulators.
Provide students with the ability to design and implement digital controllers and signal processing solutions on DSP platforms. Verification and reliability issues. Basic aspects of software documentation.</td></tr>
<tr><td>Course Contents:</td><td colspan="6">The architecture and peripheral units of DSP. MAC instructions and mechanisms, auxiliary register addressing, bit direct and bit inverse addressing. Specialized DSP units for motion control and servo motor control applications.
Code development and debugging tools. Code Composer Studio. Code simulation tools. Implementation issues on fixed and floating point architectures. Q-formats. Implementation of control algorithms and digital filters in assembler.
Implementation in C programming language. Operation and register usage and stack development with C compilers for DSP platforms. Known problems in using Harvard architecture features in C environment, exceptions. Using MACD, NORM, TBLW, SUBC, table read and bit reversed addressing in C environment. Solutions and examples. Matrix multiplication chains. Practical issues with coding the FFT on DSP platforms.
Implementation of discrete time speed and position controllers. Interpolation and microinterpolation. Pseudoinversion routines. Practical aspect of deriving the matrix singular values. Numerical issues with system identification and known solutions.
The use of code generators. .</td></tr>
<tr><td>Teaching Methods:</td><td colspan="6">10 hour of lectures and 20 hours of practical exercises in computer classroom. Additional 15 hours of personal study, exercise and homework.</td></tr>
<tr><td>Literature:</td><td colspan="6">1. S.N. Vukosavić: “Digital Control of Electrical Drives”
2. Texas Instruments: “Digital Signal Processing in VLSI”
3. Uputstvo za laboratorijske vežbe iz MPUEMP, ETF Beograd, ddc.etf.bg.ac.yu</td></tr>
<tr><td>Assessment methods:</td><td colspan="6">Periodic progress assessment during the course, complimented with homework. A, B or C grades concluded at the end of the course.</td></tr>
<tr><td>Language of instruction:</td><td>Serbian</td><td>Date:</td><td></td><td>Signature:</td><td colspan="2"></td></tr>
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