CSC 255/455 Schedule, Spring 2017 (updated 4/5)

Week	Lecture	Date	Topic	Reading	Assignment
1	1	18-Jan	introduction	EAC 1, 8.1-8.3	
2	2	23-Jan	value numbering, local	EAC 8.4.1	trivia due
	3	25-Jan	value numbering, superlocal	EAC 8.5.1, 10.5	
3	4	30-Jan	data flow analysis, AVAIL	EAC 8.6, 9.1-9.2	
	5	1-Feb	data flow analysis, LIVE	EAC 8.6, 9.1-9.2	LVN due
4	6	6-Feb	LLVM lecture by Criswell	EAC Ch. 9.2, 10.2	LLVM/RUST trial
	7	8-Feb	def-use, DCE, LLVM by Dong Chen	AK 4.4.1-4.4.2	
5	8	13-Feb	data flow properties	Dragon 9.3	trial due
	9	15-Feb	static single assignment (SSA)	EAC 9.3	hw1
6	10	20-Feb	SSA DCE and copy-propagation, PRE	SSA 1, 8	hw 1 due, hw2
	11	22-Feb	interprocedural, alias and point-to	AK 11.2.2	
7	12	27-Feb	CFL reachability, correctness	Reps 1-3, 4.1	hw 2 due, hw3
	13	1-Mar	instruction scheduling, software pipe.	EAC 12.1-3, 12.5	hw 3 due
8	14	6-Mar	mid-term review		LLVM assigned
	15	8-Mar	**mid-term exam (take home)**		opt 1 (loop) due
9	16	20-Mar	introduction: high-level transformation	AK 1	
	17	22-Mar	dependence theory	AK 2.2	
10	18	27-Mar	loop dependence, fundamental theorem	AK 2.2	opt 2 (index) due
	19	29-Mar	Allen-Kennedy vectorization	AK 2.4	
11	20	3-Apr	dependence testing	AK 3 (excluding Banerjee in 3.3.3)	
	21	5-Apr	parallelism: loop interchange, scalar expansion, node splitting,	AK 5.2-5.5	hw 4 assigned
12	22	10-Apr	control dependence	AK 7.3	opt 3 (dep) due
	23	12-Apr	data-parallel languages/compilers	AK 14.1-4.2	
13	24	17-Apr	locality: reuse distance, working set	unpublished texts	hw 4 due
	25	19-Apr	register allocation	EAC 13	
14	26	24-Apr	unroll-and-jam, blocking (Dong Chen)	AK Ch. 8.4	opt 4 (par) due
	27	28-Apr	shared cache optimization	lecture slides	hw5 assigned
15	28	1-May	auto-tuning, verification	lecture slides	
		3-May	cool compilers (Jacob Bisnett)		hw5 due
		10-May	**final exam (1:30pm to 3:30)**		

EAC: Engineering a compiler, by Cooper and Torczon, 2nd ed.
AK: Optimizing compilers for modern architectures, by Allen and Kennedy
SSA: Static single assignment book, many authors, ssabook.gforge.inria.fr/latest/book.pdf
Dragon: Compilers principles, techniques, and tools, by Aho, Lam, Sethi and Ullman