

# Jonathan Chen

## **Contact Information**

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## **Education**

### **University of California, Irvine**

**Fall 2002 – Present**

- Medical Scientist Training Program (MD/PhD)
- School of Information & Computer Science
- Basic Sciences Certificate of Excellence (2002-2003)
- US Medical Licensing Exam (USMLE) Step 1: 255 (2004)
- Educational Affairs Service Award (2004-2005) for self-initiated design and development of an assignments and scheduling system for medical student cooperative learning and elective scheduling programs
- Bioinformatics Training Grant (NIH) (2005-2006)
- ARCS Foundation Scholarship (2005-2006)

### **University of California, Los Angeles**

**Fall 1996 – Winter 2000**

- B.S. Cybernetics with Specialization in Computer Studies
- GPA: 3.90
- Medical College Admissions Test 1998: 13/14/13 (99<sup>th</sup> percentile)
- College Honors, Departmental Honors, Summa Cum Laude
- Dean's List (1997-1998)

### **California State University of Los Angeles**

**Fall 1994 – Summer 1996**

- GPA: 3.74
- Dean's List (1994-1995, 1995-1996)
- Honor's Student of the Year, Nominated (1994-1995)
- Selected into Early Entrance Program: Began full-time college attendance at age 13

## **Research Experience**

### **UC Irvine, Dept. of Computer Science, Baldi Lab Summer 2004 – Present**

- Developed toolkits to process chemical database.
- Made web available interface for searching and processing.
- Developed kernel methods based on SMILES strings and 3D structure
- Analysis, including clustering of predicted vs. experimental 3D structures

- Presentation of process and results at 2005 UCI MSTP Retreat, various poster symposiums

**UC Irvine, Dept. of Computer Science, Lathrop** **Summer 2003**

- Integrate tool sources to produce surface data
- Geometric transformations and projections into flattened surface
- Application of useful descriptive data (electrostatics)
- Linear interpolation technique to enable valuable "diff" surfaces
- Feed of surface data into machine learning algorithms
- Correlation of results against other analysis (3D position)
- Presentation of process and results at 2004 UCI MSTP Retreat

**UCLA Brain Research Institute, Schlag Lab** **Summer 1998 – Spring 1999**

- Research Student
- Developed an automated and more precise data analysis method using Excel macros (VB for apps)

***Teaching Experience***

**UC Irvine, School of Medicine** **2004 – 2005**

- Medical student tutor
- Anatomy, Immunology, Neuroscience

**Kumon Math Center** **Summer 1995**

- Tutor

***Work Experience***

**20<sup>th</sup> Century Fox, Information Tech.** **Summer 2001 – Summer 2002**

Software Developer, "Tuscany/Provence" Accounts Receivable, Contract Maintenance Application

- MVC Architected multi-tiered application. JSP, Servlet web-tier, Session EJB business tier, JDBC, Oracle database.
- Single-handedly championed effort to introduce automated testing and quality process, beginning with PowerPoint presentation to department IT group.
- Implemented first framework for automated application testing: unit testing (JUnit), functional testing (Astra QuickTest), the results of which the project manager declared invaluable paid for itself 3-fold.
- JUnit testing framework developed included mock object representations of HttpServletRequests enabling testing of servlet APIs.
- Pushed initiative to employ issue-tracking tool as part of quality process plan to facilitate management and communication among the team,

including a user accessible version as a medium for users to direct requests and bug reports directly to team.

- Ideas sparked force behind design of sophisticated user security model, which accounts for both user functional roles and context of secured data.
- Crafted elegant, reusable, object-oriented approach to provide powerful "column-sorting" feature for all application data tables.
- Performance tuning employing tools and techniques such as JProbe, JDBC 2.0 "Batch" statements, assurance of proper table indexing, table denormalization.
- Major contributor to recruiting process of concrete technical skills assessment questions (e.g. pseudo-coding algorithms during interview) which greatly increased efficacy in discerning candidates' abilities.
- Conceived of and implemented many UI and layout enhancements to improve usability such as for selecting a set of items from a long list of items. Previous design was list that required "Ctrl+Click" of successive items. New design separated into "Available" and "Selected" list with JavaScript enabled buttons to move items between lists. Display of list item detail on mouse-over. Simple, but highly effective. Manual sorting of list of objects, JavaScript to enable move up/down, cut and paste features.
- Contributed to design of code generator that read Oracle metadata to generate simple JDBC calls to find and persist Java bean objects as rows in DB table.
- Created JSP prototype of screens for second phase of development. Tangible enough for users to understand consequences, tradeoffs. Efficiently produced, "sketch," but convincing enough to be of high value. Considerably more than "paper & pencil" mock-ups previously used.
- Led presentations to key business users of prototype, complicated functionality such as License Rights management and fee calculations, taking advantage of detailed knowledge beyond business analyst's level of detail knowledge. Furthermore, produced development and user documentation to support presentations.
- Identified and resolved several key issues in migration from Weblogic 5.1 to 7.0, where previously constructed unit test suite and automated function regression tests definitely helped significantly.
- Researched and implemented "file upload" feature, from parsing Multipart/Form-Data encoded Http Requests to streaming binary data into Weblogic/Oracle JDBC "BLOBs."
- Conceived of and implemented framework to easily accept both US and international date formats (parse as day or month first) by considering each users' request Locale.
- Environment: Weblogic 7.0, 5.1, Java, J2EE, EJB, JSP, Servlets, Oracle 8i, JDBC, JavaScript, CSS, JUnit, Astra QuickTest

**Trilogy Software**

**Summer 2000 – Spring 2001**

Software Engineer / Quality Engineer

- Developed project quality plans, educated and coordinated teams in quality processes

Presales Development, Lucent Solutions, Avaya Communication

- Produced demo application for Avaya sales cycle, which impressed VP enough to refer to CIO

Integration Consultant at Williams Communications Solutions

- Coordinated team of 10 to update application site for cross-browser (IE and Netscape) compatibility. Spearheaded the effort and produced HTML-JSP guideline document for continued development.
- Developed reusable HTML-JavaScript calendar widget, plus Java date forecast validation control.

Prototype Development, Lands' End

- Created Java-Swing dynamic search tree control for searching an attribute based item catalog.
- Environment: Java, JSP, MS SQL Server, Proprietary "Multi-Channel Commerce" platform comparable to J2EE

## **20<sup>th</sup> Century Fox, Information Tech                      Summer 1999 – Winter 2000**

Software Developer, "Atlas" Home Entertainment International Sales Forecasting Application

- Data modeling, design, development and deployment of distributed 3-tiered applications
- Integrated ActiveX spell checking component with existing application
- Efficiently solved problem using object metadata (reflection/introspection) in ways others thought impossible
- Integrated complex persistence of data from web-based UI to database in days when others only made progress in weeks
- Environment: Forte (Express), HTML, JavaScript, Oracle 8i

### **Skills**

<b>Category</b>	<b>Skill</b>	<b>Rating</b>
Development Language	Python	3
	Java	3
	JSP	2
	JavaScript	3
	HTML, CSS	3
	SQL	3
	PL/SQL	1
	C / C++	2
	Visual Basic	2
	Forte (Express)	1
	Perl	1
Database System	ColdFusion	2
	Oracle 8i	2
	MS SQL Server	2

	MS Access	3
	TOAD	2
	PostgreSQL	2
Development Tool	CVS (WinCVS)	3
	Visual Source Safe	1
	Perforce	1
	JSwat	2
	JProbe	1
	Windows XP/2000	3
	MS-DOS	3
	Unix OS	2
	Makefile	1
	ANT	2
Automated Testing	Astra QuickTest	3
	Silk	2
	Webload	2
	Junit	3
Development Technology	J2EE	2
	EJB	2
	Java Servlets	2
	JDBC	2
	Swing	1
	Weblogic 7.0, 5.1	2
	XML	1
	TopLINK	1
	Java3D	2
	VRML	2
Productivity	MS Word	3
	MS Excel	3
	MS PowerPoint	3
	Paint Shop Pro	3
	Visio	1
	DreamWeaver	1
Scientific	OEChem	3
	Ogham / OEDepict	2
	MSMS (Molecular Surface)	2
	OpenBabel	1
	Corina	1

### ***Selected Presentations***

- Jonathan H Chen, Peter Phung, Pierre F Baldi. Synthesis Explorer: Dynamically generated reaction and synthesis problems for organic chemistry education. ACS National Meeting, Chicago, IL, Spring 2007.

- Jonathan H Chen, Erik Linstead, S Joshua Swamidass, Dennis Wang, Yimeng Dou, Pierre Baldi. ChemDB: A public database of small molecules and related chemoinformatics resources. ACS National Meeting, Chicago, IL, Spring 2007.
- Jonathan H Chen. Chemical Informatics: Database Searching, Similarity Measures and Property Prediction. National Library of Medicine Training Conference, Vanderbilt University, Nashville, TN, Spring 2006.

## **Publications**

- Chloé-Agathe Azencott, Alexandre Ksikes, S. Joshua Swamidass, Jonathan Chen, Liva Ralaivola, and Pierre Baldi. One- to Four-Dimensional Kernels for Small Molecules and Predictive Regression of Physical, Chemical, and Biological Properties, *Journal of Chemical Informatics and Modeling*, (2006) In press.
- Jonathan Chen, S. Joshua Swamidass, Yimeng Dou, Jocelyne Bruand, Pierre Baldi. ChemDB: A Public Database of Small Molecules and Related Chemoinformatics Resources, *Bioinformatics* 21: 4133-4139 (2005).
- S. Joshua Swamidass, Jonathan Chen, Peter Phung, Jocelyne Bruand, Liva Ralaivola, and Pierre Baldi. Kernels for Small Molecules and the Prediction of Mutagenicity, Toxicity, and Anti-Cancer Activity. Proceedings of the 2005 Conference on Intelligent Systems for Molecular Biology, ISMB 05. *Bioinformatics*, 21, Supplement 1, i359-368, (2005).
- S. A. Danziger, S. J. Swamidass, J. Zeng, L. R. Dearth, Q. Lu, J. H. Chen, J. Cheng, V. P. Hoang, H. Saigo, R. Luo, P. Baldi, Rainer K. Brachmann, and Richard H. Lathrop. Functional census of mutation sequence spaces: The example of p53 cancer rescue mutants. *IEEE Transactions on Computational Biology and Bioinformatics*, (2005).