Therapy Symposium: Decision Support for Radiation Therapy
Room 213CD: 10:30 pm – 12:00pm
Fang-Fang Yin, Duke University
Yaorong Ge, Wake Forest University
Q. Jackie Wu, Duke University
Ying Xiao, Thomas Jefferson University
Mark Philips, University of Washington

Learning Objectives
1. To discuss the need for decision support in health care and specifically in radiation therapy
2. To review major concepts and approaches in clinical decision support systems
3. To describe example systems for decision support in radiation therapy
4. To present a number of new techniques for decision support in intensity modulated radiation treatment planning

Modern Radiation Therapy Work Flow

<table>
<thead>
<tr>
<th>Patient process</th>
<th>QA process</th>
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</thead>
<tbody>
<tr>
<td>Case selection</td>
<td>QA task-Machine-specific</td>
</tr>
<tr>
<td>Immobilization</td>
<td>· Dosimetric accuracy</td>
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<tr>
<td>3/4-D simulation</td>
<td>· Geometric accuracy</td>
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<td>3/4-D planning</td>
<td>· Imaging accuracy</td>
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<tr>
<td>Patient setup</td>
<td>· Calibration</td>
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<tr>
<td>3/4-D simulation</td>
<td>· Safety</td>
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<tr>
<td>3/4-D planning</td>
<td>· Functionality</td>
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<tr>
<td>Patient setup</td>
<td>· QA task-Patient specific</td>
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<tr>
<td>3/4-D simulation</td>
<td>· Dosimetric QA</td>
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<tr>
<td>3/4-D planning</td>
<td>· Safety QA</td>
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<tr>
<td>Patient setup</td>
<td>· Real-time verification</td>
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<tr>
<td>3/4-D simulation</td>
<td>· Motion management</td>
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<tr>
<td>3/4-D planning</td>
<td>· QA task-Process</td>
</tr>
</tbody>
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Modern Radiation Patient Adaptation

- Simulation
- Planning
- Patient setup
- On-board imaging
- QA/QC
- Re-plan?

Information-Guided Radiation Therapy

- Patient data
- Image data
- Clinical data
- Reasoning
- OIS
- Information-Guided Radiation Therapy

4 Distinguished Speakers

- Yaorong Ge, Ph.D.
  Decision Support in Radiation Therapy
- Q. Jackie Wu, Ph.D.
  Knowledge Based Treatment Planning
- Ying Xiao, Ph.D.
  Data Integration and Data Mining - RTOG Bioinformatics
- Mark Phillips, Ph.D.
  Decision Making Under Uncertainty