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Synopsis of Tracer Technologies, Inc DC Live/Forensics Training Course.

Note: We change this course on a continuing basis as the software changes or new tools are added. We also focus on areas that are newly emerging in the field and drop training on areas that have become less relevant as time passes - for example, we no longer train on recovery of audio from microcassettes, but instead discuss compression issues with common digital recorders.

- **Length** - 3 Days
- **Course Type** - Classroom
- Students provide laptop and headphones
- Instructor provides 500MB of sample files, binder with training materials, etc.

Day One:

We offer a quick refresher on audio theory to begin the course. We cover the importance and measurement of Frequency and Amplitude.

Next, we offer an overview of time domain vs. frequency domain and we introduce measurement tools in the software for both.

The class uses these tools to show understanding of these concepts in a, hands on lab experiment.

After our review of audio theory, we introduce filtering and go over the history and modern usage of classic filters such as High/Low/Bandpass/EQ, etc.

The class then uses these tools to enhance two or more real world recordings. Each student does this on their own and then presents their results and impressions to the class.

Day Two:

We start by introducing our first Frequency domain tools and go over, in depth, the connections to this new type of tool with our classic tools. This helps the student see, in context, the development of new approaches and helps them learn to choose the correct tools for a specific situation.

We cover all aspects of our first Continuous Noise filter tool since this is the basis for understanding the usage of these frequency domain tools.

The class then redoes one or more of the files that worked on with the classic tools using our new more automatic variety.

New types of noise files are then introduced that cannot be improved appreciably with classic tools and they begin to understand the importance of subtractive type noise reduction tools.

Lastly, the third major category of tools is introduced - Adaptive filters. We put these in context and show them as a progression in noise reduction starting with our classic tools, moving on to CNF-type tools and now to tools that automatically adapt to a changing noise environment.

DC Live/Forensics includes several types of adaptive tools and these are explored with labs using actual forensic files.

Day Three:

We start with an lab exercise where students apply all they have learned in the entire course and work together as a group to achieve a goal stated by the person who provided the recording. We finish our discussion of tools with an introduction to a new high resolution spectrogram and use it to judge the authenticity of various recordings.

Next, we introduce the concept of inverse spectral filtering to help make hard to understand recordings more easily heard.

And also we introduce the "Wizard" approach to noise reduction and audio enhancement using our newest tool - EZ forensics.

We then finish the day with student provided real world audio files. When possible, each student applies what they have learned on these files - which none of us have ever heard before - in an attempt to enhance them.