

An Overview of the “Looking for Victims” System

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Speech outline

- What Looking for Victims (L4V) is
- Main actors involved
- Obtainable results
- Information requirements
- System architecture
- Agents

What Looking for Victims (L4V) is

- L4V is a computer program mainly devoted to the identification of the victims of mass disasters by means of nuclear DNA evidence
- L4V implements a stochastic system representing the relations among individuals' genotypes variously involved in a disaster and relevant identification hypotheses
- L4V considers simultaneously all evidence and hypotheses at hand, exploiting dependence and conditional independence to achieve identification probabilities

Main actors involved

- Victims (observed and to be identified)
- Missing persons (generally unobserved but identified)
- Missing persons' families and their pedigrees

Results

- We obtain identification probabilities, i.e. we answer these sort of questions:
- What is the probability a certain missing person is one of the recovered victims (detailing for each one of them) or is still not recovered?
- What is the probability a certain victim is one of the known missing persons (detailing for each one of them) or is among those still unknown?

Information required

- Victims' and missing persons' relatives' nuclear DNA, no restrictions on the employed loci. The unavailability of some loci is allowed
- Missing persons' and victims' gender
- The familial relationships (pedigrees)
- A conservative estimate of the number of victims and the proportions of different ethnic groups involved

System's architecture

- It is a Client – Server architecture
- A LINUX server with MySQL and PHP version 5 installed is required
- All the required software is freely available on the WEB
- All the system agents can work via internet from anywhere

Agents: the System Manager

- Prepares the computer system loading MySql and PHP
- Adds allele systems' frequencies and the other parameters relevant for genetic populations
- Initializes the cases, specifying the number of the persons presumably involved in the disaster, the proportion of individuals for each of the ethnic groups involved
- Gives credentials to the operators to work on each case.

Agents: The Log Manager

- Asks for reports about the system activity over a specific period of time, details about the new cases, the operators working on the assigned cases, the name of new or updated populations
- Asks for reports about specific cases in a time period, requiring details on the activity of the system manager and of the operators
- Asks for reports about specific operators, or the system manager, requiring details on their activity

Agents: The Operators

- Add the DNA information on victims, specifying the gender from the Amelogenin marker
- Add the missing persons claiming families, specifying their ethnicity. The pedigree is provided through parents-offspring relations. It is also required to indicate the DNA donors, the missing persons and their gender
- Add the DNA information for the DNA donors in each family.
- Ask reports on identification, specifying if the output has to be provided for victims or for missing persons.