

набор объектов, для которых заранее определены классы. Это множество называется обучающей выборкой, её разметка производится вручную, с привлечением специалистов в исследуемой области [2].

Метод опорных векторов (англ. SVM, support vector machine) — набор схожих алгоритмов обучения с учителем, использующихся для задач классификации и регрессионного анализа. Основная идея метода — перевод исходных векторов в пространство более высокой размерности и поиск разделяющей гиперплоскости с максимальным зазором в этом пространстве. Две параллельных гиперплоскости строятся по обеим сторонам гиперплоскости, разделяющей классы. Разделяющей гиперплоскостью будет гиперплоскость, максимизирующая расстояние до двух параллельных гиперплоскостей [3].

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BRACHYTHERAPY IN THE TREATMENT OF CANCEROUS (MALIGNANT) DISEASES

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Brachytherapy is one of the innovative methods of radiation therapy, where a radiation source based on the I125 isotope is implanted into the tumorous tissue.

Brachytherapy is one of the innovative methods of radiation therapy, where a radiation source based on the I¹²⁵ isotope is implanted into the tumorous tissue. The microsource is a air-locked multicomponent product consisting of a silver base with the I¹²⁵ radioisotope and a titanium capsule braided with a fiber of reabsorbable surgical material. Brachytherapy is the most attenuated method in the treatment of prostate cancer today.

The facility complex consists of three main blocks that allow for local and thorough irradiation of the prostate gland and neoplasms: a three-dimensional sound facility that directly visualizes the prostate gland itself and the neoplasm in it; an interoperative

planning system that provides the main advantage of brachytherapy - unsurpassed irradiation accuracy; apparatus "NUCLETRON", which contains the radiation source.

D&K Technologies CmBh PSID (JetSpeed 5) software is designed for planning prostate cancer treatment and for individual dose prescription. The software supports online connection to the ultrasound system during the preliminary planning of the implantation of radioactive sources and during the operation.

The basic dose is calculated for the entire period of 596 days of active persistence of the implant and is 160 Gy in the prostate gland. The lower limit of the effective dose is D90 144 Gy along the contour of the prostate gland. In this case, the maximum permissible load on the urethra is 140 Gy, the rectum and the bladder 30 Gy, and should not exceed 30% of the volume calculated during planning, usually 1 - 1.5 cm². The use of low energies guarantees a high dose fall gradient. The load on other organs and structures of the small pelvis does not exceed 0.1 Gy. The adequacy of the dosimetry plan and doses is assessed by the radiation oncologist. There are different approaches to the distribution of grains at different centers, but the common thing is to calculate the dose based on the anatomy of each individual prostate gland, and not on an accepted standard. The purpose of this work is to study the relevance of the interface, the unity of the platform, a comprehensive assessment of the planning and connection flexibility of the PSID (JetSpeed 5) software from D&K Technologies Cmbh and to evaluate the visualization of the image of the analysis of the planning system for different radiation-monitoring plans.

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